Tranquility®
High Efficiency
(TR) Series
Submittal Data

Models TRH/V 006 - 060
60Hz - HFC-410A

English Language/I-P Units

Revised: 18 July, 2013

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LC516 Revised: 18 July, 2013

ClimateMaster®
Water-Source Heat Pump Systems

SUBMITTAL DATA - I-P UNITS

Unit Designation: _____

Job Name: _____

Architect: _____

Engineer: _____

Contractor: _____

PERFORMANCE DATA

Cooling Capacity: _____ Btuh

EER: _____

Heating Capacity: _____ Btuh

COP: _____

Ambient Air Temp: _____ °F

Entering Water Temp (Clg): _____ °F

Entering Air Temp (Clg): _____ °F

Entering Water Temp (Htg): _____ °F

Entering Air Temp (Htg): _____ °F

Airflow: _____ CFM

Fan Speed or Motor/RPM/Turns: _____

Operating Weight: _____ (lb)

ELECTRICAL DATA

Power Supply: _____ Volts

_____ Phase _____ Hz

Minimum Circuit Ampacity: _____

Maximum Overcurrent Protection: _____

Tranquility®
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(TR) Series
Submittal Data

Models TRH/V 006 - 060
60Hz - HFC-410A

English Language/S-I Units

Revised: 18 July, 2013

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LC516 Revised: 18 July, 2013

ClimateMaster®
Water-Source Heat Pump Systems

SUBMITTAL DATA - S-I UNITS

Unit Designation: _____

Job Name: _____

Architect: _____

Engineer: _____

Contractor: _____

PERFORMANCE DATA

Cooling Capacity: _____ kW

EER: _____

Heating Capacity: _____ kW

COP: _____

Ambient Air Temp: _____ °C

Entering Water Temp (Clg): _____ °C

Entering Air Temp (Clg): _____ °C

Entering Water Temp (Htg): _____ °C

Entering Air Temp (Htg): _____ °C

Airflow: _____ l/s

Fan Speed or Motor/RPM/Turns: _____

Operating Weight: _____ (kg)

ELECTRICAL DATA

Power Supply: _____ Volts

_____ Phase _____ Hz

Minimum Circuit Ampacity: _____

Maximum Overcurrent Protection: _____

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*Document page number is shown next to part number (e.g. LC516 - 3 = page 3). Since not all pages are typically used in the submittals process, the page number in the lower right corner can still be used (page ____of_____).

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Unit Features

THE TRANQUILITY® TR SERIES

The award winning Tranquility® Series raises the bar for water-source heat pump efficiencies, features and application flexibility. Not only does the Tranquility® TR exceed ASHRAE 90.1 efficiencies, but it also uses EarthPure® HFC-410A zero ozone depletion refrigerant, making it an extremely environmentally-friendly option. Tranquility® TR is eligible for additional LEED (Leadership in Energy and Environmental Design) points because of the "green" technology design.

Available in sizes from 1/2 ton (1.76 kW) through 5 tons (17.6 kW) with multiple cabinet options (vertical upflow and horizontal) the Tranquility® TR offers a wide range of units for most any installation. The Tranquility® TR has an extended range refrigerant circuit, capable of geothermal ground loop applications (with optional extended range insulation) as well as boiler-tower water loop applications. Standard features include: scroll compressors (rotary for size 018 and below), microprocessor controls, galvanized steel cabinet, epoxy powder painted front access panel, galvanized steel with epoxy powder painted drain pan and sound absorbing air handler insulation are just some of the features of the Tranquility® TR Series.

ClimateMaster's exclusive double isolation compressor mounting system makes the Tranquility® TR one of the quietest units on the market. Compressors are mounted on specially engineered sound-tested EPDM grommets or spring vibration isolators to a heavy gauge mounting plate, which is further isolated from the cabinet base with rubber grommets for maximized vibration and sound attenuation. The easy access control box and large access panels make installing and maintaining the unit easier than other water-source heat pumps currently in production.

Options such as coated air coil, DDC controls, high efficiency pleated MERV 11 two-inch (51mm) air filter or one-inch (25mm) pleated MERV 8 air filters allow customized design solutions. Optional high static fan motor expands the operating range and helps overcome some of the challenges associated with ductwork for retrofit installations. A Cupro-nickel water-coil and sound absorbing UltraQuiet package are options that make a great unit even better.

The Tranquility® TR Series Water-Source Heat Pumps are designed to meet the challenges of today's HVAC demands with one of the most innovative products available on the market.

UNIT FEATURES

- Sizes 006 (1/2 ton, 1.76 kW) through 060 (5 tons, 17.6 kW)
- EarthPure® HFC-410A refrigerant
- Exceeds ASHRAE 90.1 efficiencies
- Galvanized steel construction with attractive matte black epoxy powder coat paint front access panels.
- Epoxy powder painted galvanized steel drain pan
- Sound absorbing glass fiber insulation
- Unique double isolation compressor mounting for quiet operation
- Insulated divider and separate compressor/air handler compartments
- Scroll compressors (rotary for size 018 and below)
- TXV metering device
- Microprocessor controls standard (optional DXM and/or DDC controls)
- Field convertible discharge air arrangement for horizontal units
- PSC three-speed fan motor (2 speed for 575 volt)
- Internally trapped condensate drain line (vertical units only)
- Unit Performance Sentinel performance monitoring system
- Eight Safeties Standard
- Extended range (20 to 120°F, -6.7 to 48.9°C) capable

AVAILABLE OPTIONS

- High static blowers
- LonWorks, BACnet, Modbus and Johnson N2 compatibility options for DDC controls
- Cupro-nickel water-coil
- Sound absorbing UltraQuiet package
- Coated air coil
- Hot water generator
- Secondary circulating pump
- Water balancing valve
- ClimaDry® modulating reheat

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Selection Procedure

Reference Calculations

Heating

$$LWT = EWT - \frac{HE}{GPM \times 500}$$

$$LAT = EAT + \frac{HC}{CFM \times 1.08}$$

Cooling

$$LWT = EWT + \frac{HR}{GPM \times 500}$$

$$LAT\ (DB) = EAT\ (DB) - \frac{SC}{CFM \times 1.08}$$

$$LC = TC - SC$$

$$S/T = \frac{SC}{TC}$$

Legend and Glossary of Abbreviations

BTUH = BTU(British Thermal Unit) per hour
CFM = airflow, cubic feet/minute
COP = coefficient of performance = BTUH output/BTUH input
DB = dry bulb temperature (°F)
EAT = entering air temperature, Fahrenheit (dry bulb/wet bulb)
EER = energy efficiency ratio = BTUH output/Watt input
MPT = male pipe thread
ESP = external static pressure (inches w.g.)
EWT = entering water temperature
GPM = water flow in U.S. gallons/minute
HE = total heat of extraction, BTUH
HC = air heating capacity, BTUH
HR = total heat of rejection, BTUH
HWC = hot water generator (desuperheater) capacity, Mbtuh
FPT = female pipe thread
KW = total power unit input, kilowatts
LAT = leaving air temperature, °F
LC = latent cooling capacity, BTUH
LWT = leaving water temperature, °F
MBTUH = 1000 BTU per hour
S/T = sensible to total cooling ratio
SC = sensible cooling capacity, BTUH
TC = total cooling capacity, BTUH
WB = wet bulb temperature (°F)
WPD = waterside pressure drop (psi & ft. of hd.)

Conversion Table - to convert inch-pound (English) to S-I (Metric)

Air Flow	Water Flow	Ext Static Pressure	Water Pressure Drop
Airflow (L/s) = CFM x 0.472	Water Flow (L/s) = gpm x 0.0631	ESP (Pa) = ESP (in of wg) x 249	PD (kPa) = PD (ft of hd) x 2.99

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Selection Procedure

Step 1 Determine the actual heating and cooling loads at the desired dry bulb and wet bulb conditions.

Step 2 Obtain the following design parameters: Entering water temperature, water flow rate in GPM, air flow in CFM, water flow pressure drop and design wet and dry bulb temperatures. Air flow CFM should be between 300 and 450 CFM per ton. Unit water pressure drop should be kept as close as possible to each other to make water balancing easier. Go to the appropriate tables and find the proper indicated water flow and water temperature.

Step 3 Select a unit based on total and sensible cooling conditions. Select a unit which is closest to, but no larger than, the actual cooling load.

Step 4 Enter tables at the design water flow and water temperature. Read the total and sensible cooling capacities (Note: interpolation is permissible, extrapolation is not).

Step 5 Read the heating capacity. If it exceeds the design criteria it is acceptable. It is quite normal for water-source heat pumps to be selected on cooling capacity only since the heating output is usually greater than the cooling capacity.

Step 6 Determine the correction factors associated with the variable factors of dry bulb and wet bulb.

Corrected Total Cooling = tabulated total cooling x wet bulb correction.

Corrected Sensible Cooling = tabulated sensible cooling x wet/dry bulb correction.

Step 7 Compare the corrected capacities to the load requirements. Normally if the capacities are within 10% of the loads, the equipment is acceptable. It is better to undersize than oversize, as undersizing improves humidity control, reduces sound levels and extends the life of the equipment.

Step 8 When completed, calculate water temperature rise and assess the selection. If the units selected are not within 10% of the load calculations, then review what effect changing the GPM, water temperature and/or air flow and air temperature would have on the corrected capacities. If the desired capacity cannot be achieved, select the next larger or smaller unit and repeat the procedure. Remember, when in doubt, undersize slightly for best performance.

Example Equipment Selection For Cooling

Step 1 Load Determination:

Assume we have determined that the appropriate cooling load at the desired dry bulb 80°F and wet bulb 65°F conditions is as follows:

Total Cooling.....24,500 BTUH
Sensible Cooling.....21,800 BTUH
Entering Air Temp.....80°F Dry Bulb / 65°F Wet Bulb

Step 2 Design Conditions:

Similarly, we have also obtained the following design parameters:

Entering Water Temp.....90°F
Water Flow (Based upon 10°F rise in temp.).....6.0 GPM
Air Flow.....750 CFM

Step 3, 4 & 5 HP Selection:

After making our preliminary selection (TR024), we enter the tables at design water flow and water temperature and read Total Cooling, Sens. Cooling and Heat of Rej. capacities:

Total Cooling.....23,400 BTUH
Sensible Cooling.....17,500 BTUH
Heat of Rejection.....30,200 BTUH

Step 6 & 7 Entering Air and Airflow Corrections:

Next, we determine our correction factors.

	Table		Ent Air		Air Flow		Corrected
Corrected Total Cooling =	23,400	x	0.9681	x	0.9947	=	22,533
Corrected Sens Cooling =	17,500	x	1.1213	x	1.0222	=	20,058
Corrected Heat of Reject =	30,200	x	0.9747	x	0.9668	=	28,459

Step 8 Water Temperature Rise Calculation & Assessment:

Actual Temperature Rise.....9.5°F

When we compare the Corrected Total Cooling and Corrected Sensible Cooling figures with our load requirements stated in Step 1, we discover that our selection is within +/- 10% of our sensible load requirement. Furthermore, we see that our Corrected Total Cooling figure is within 1,000 Btuh the actual indicated load.

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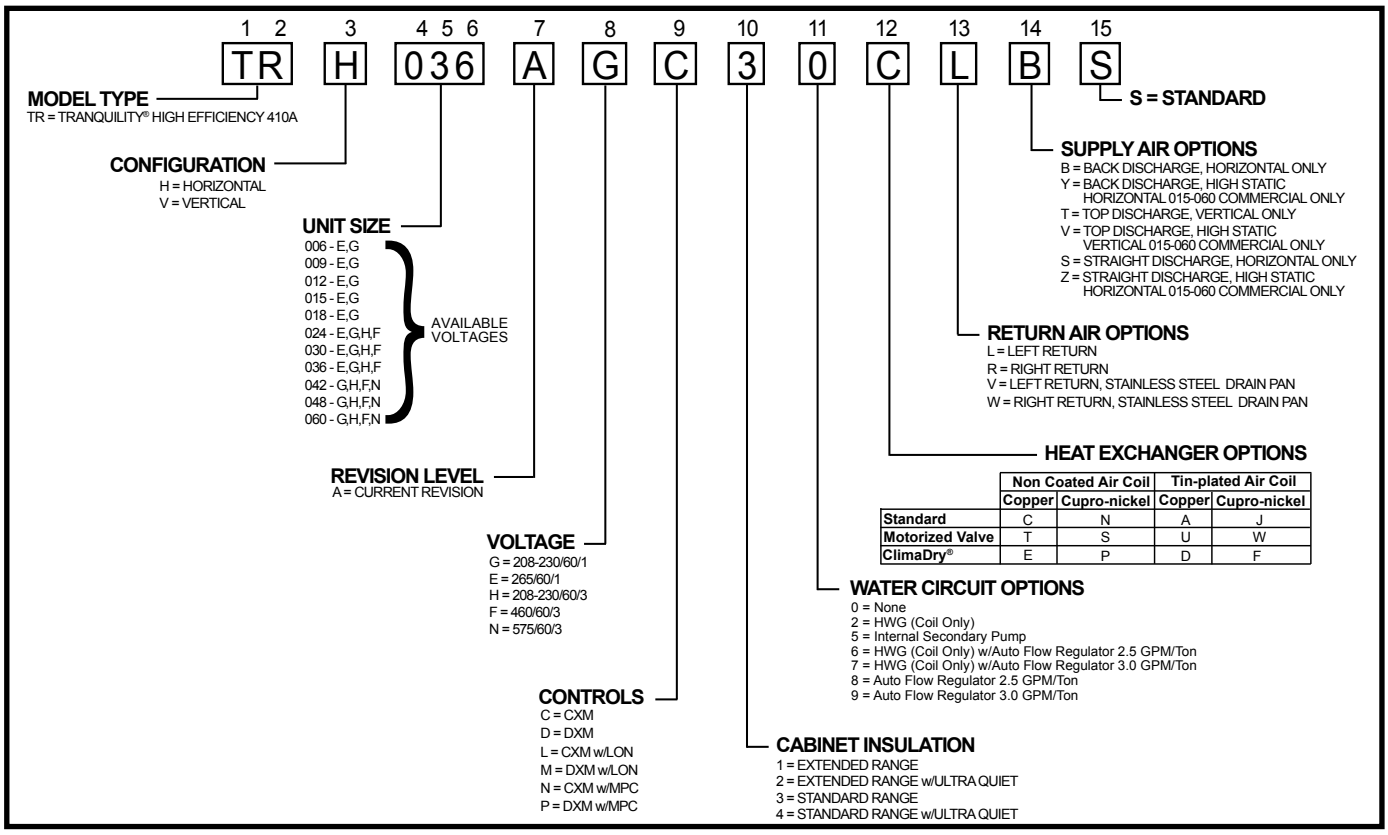
TR Series Nomenclature


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
TR H 036 A G C 3 0 C L B S
MODEL TYPE
TR = TRANQUILITY® HIGH EFFICIENCY 410A
CONFIGURATION
H = HORIZONTAL
V = VERTICAL
UNIT SIZE
006 - E,G
009 - E,G
012 - E,G
015 - E,G
018 - E,G
024 - E,G,H,F
030 - E,G,H,F
036 - E,G,H,F
042 - G,H,F,N
048 - G,H,F,N
060 - G,H,F,N
AVAILABLE VOLTAGES
REVISION LEVEL
A = CURRENT REVISION
VOLTAGE
G = 208-230/60/1
E = 265/60/1
H = 208-230/60/3
F = 460/60/3
N = 575/60/3
CONTROLS
C = CXM
D = DXM
L = CXM w/LON
M = DXM w/LON
N = CXM w/MPC
P = DXM w/MPC
CABINET INSULATION
1 = EXTENDED RANGE
2 = EXTENDED RANGE w/ULTRA QUIET
3 = STANDARD RANGE
4 = STANDARD RANGE w/ULTRA QUIET
WATER CIRCUIT OPTIONS
0 = None
2 = HWG (Coil Only)
5 = Internal Secondary Pump
6 = HWG (Coil Only) w/Auto Flow Regulator 2.5 GPM/Ton
7 = HWG (Coil Only) w/Auto Flow Regulator 3.0 GPM/Ton
8 = Auto Flow Regulator 2.5 GPM/Ton
9 = Auto Flow Regulator 3.0 GPM/Ton
HEAT EXCHANGER OPTIONS
Non Coated Air Coil | Tin-plated Air Coil
Copper | Cupro-nickel | Copper | Cupro-nickel
Standard C N A J
Motorized Valve T S U W
ClimaDry® E P D F
RETURN AIR OPTIONS
L = LEFT RETURN
R = RIGHT RETURN
V = LEFT RETURN, STAINLESS STEEL DRAIN PAN
W = RIGHT RETURN, STAINLESS STEEL DRAIN PAN
SUPPLY AIR OPTIONS
B = BACK DISCHARGE, HORIZONTAL ONLY
Y = BACK DISCHARGE, HIGH STATIC HORIZONTAL 015-060 COMMERCIAL ONLY
T = TOP DISCHARGE, VERTICAL ONLY
V = TOP DISCHARGE, HIGH STATIC VERTICAL 015-060 COMMERCIAL ONLY
S = STRAIGHT DISCHARGE, HORIZONTAL ONLY
Z = STRAIGHT DISCHARGE, HIGH STATIC HORIZONTAL 015-060 COMMERCIAL ONLY
S = STANDARD

ClimaDry® II Option Notes:

1. Unit must have DXM control option. 460 volt unit units require a four wire power supply with neutral.
2. ClimaDry® II may not be combined with motorized water valve, internal secondary circulating pump, or automatic flow regulator options.
3. Unit minimum entering air temperature while in the dehumidification, cooling, or continuous fan modes is **70°F DB/61°F WB**. Operation below this minimum may result in nuisance faults.
4. A thermostat with dehumidification mode or thermostat and separate humidistat/dehumidistat is required for activation and control of ClimaDry® II.
5. 575 volt units are not eligible for ClimaDry® II.

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Performance Data – AHRI/ASHRAE/ISO 13256-1

ASHRAE/AHRI/ISO 13256-1. English (I-P) Units

Model	Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump			
	Cooling 86°F		Heating 68°F		Cooling 59°F		Heating 50°F		Cooling 77°F		Heating 32°F	
	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP	Capacity Btuh	EER Btuh/W	Capacity Btuh	COP
TR-006	5,800	13.2	7,500	4.7	6,900	21.1	6,200	4.0	6,200	15.4	4,900	3.4
TR-009	8,800	13.4	11,600	4.2	10,100	21.0	9,800	3.9	9,300	15.7	7,900	3.4
TR-012	11,700	13.5	15,200	4.3	13,700	20.8	12,500	3.8	12,000	14.9	9,900	3.2
TR-015	14,500	15.4	17,300	5.0	16,800	24.5	14,400	4.4	15,000	17.2	11,100	3.6
TR-018	17,300	14.3	21,500	5.0	20,600	24.2	17,200	4.4	18,400	16.3	13,900	3.4
TR-024	23,700	13.4	28,500	4.7	26,700	20.9	24,000	4.1	24,900	15.4	18,500	3.3
TR-030	28,100	13.4	35,100	4.6	31,700	20.1	29,600	4.1	28,900	15.1	23,400	3.4
TR-036	34,500	13.5	45,200	4.4	38,700	20.7	37,500	4.0	35,300	14.9	29,600	3.3
TR-042	40,100	13.1	52,700	4.3	45,900	19.6	44,000	3.8	40,500	14.4	34,300	3.2
TR-048	47,700	13.3	55,900	4.7	54,300	20.5	46,500	4.1	49,000	14.7	36,400	3.4
TR-060	59,400	13.4	77,000	4.3	66,600	19.9	64,000	3.8	60,100	14.8	50,500	3.1

Cooling capacities based upon 80.6°F DB, 66.2°F WB entering air temperature.
Heating capacities based upon 68°F DB, 59°F WB entering air temperature.
All ratings based upon operation at lower voltage of dual voltage rated models.

ASHRAE/AHRI/ISO 13256-1. Metric (S-I) Units

Model	Water Loop Heat Pump				Ground Water Heat Pump				Ground Loop Heat Pump			
	Cooling 30°C		Heating 20°C		Cooling 15°C		Heating 10°C		Cooling 25°C		Heating 0°C	
	Capacity kW	EER W/W	Capacity kW	COP	Capacity kW	EER W/W	Capacity kW	COP	Capacity kW	EER W/W	Capacity kW	COP
TR-006	1.70	3.9	2.20	4.7	2.02	6.2	1.82	4.0	1.82	4.5	1.44	3.4
TR-009	2.58	3.9	3.40	4.2	2.96	6.2	2.87	3.9	2.72	4.6	2.31	3.4
TR-012	3.43	4.0	4.45	4.3	4.01	6.1	3.66	3.8	3.52	4.4	2.90	3.2
TR-015	4.25	4.5	5.07	5.0	4.92	7.2	4.22	4.4	4.39	5.0	3.25	3.6
TR-018	5.07	4.2	6.30	5.0	6.04	7.1	5.04	4.4	5.39	4.8	4.07	3.4
TR-024	6.94	3.9	8.35	4.7	7.82	6.1	7.03	4.1	7.30	4.5	5.42	3.3
TR-030	8.23	3.9	10.28	4.6	9.29	5.9	8.67	4.1	8.47	4.4	6.86	3.4
TR-036	10.11	4.0	13.24	4.4	11.34	6.1	10.99	4.0	10.34	4.4	8.67	3.3
TR-042	11.75	3.8	15.44	4.3	13.45	5.7	12.89	3.8	11.87	4.2	10.05	3.2
TR-048	13.98	3.9	16.38	4.7	15.91	6.0	13.62	4.1	14.36	4.3	10.67	3.4
TR-060	17.40	3.9	22.56	4.3	19.51	5.8	18.75	3.8	17.61	4.3	14.80	3.1

Cooling capacities based upon 27°C DB, 19°C WB entering air temperature.
Heating capacities based upon 20°C DB, 15°C WB entering air temperature.
All ratings based upon operation at lower voltage of dual voltage rated models.

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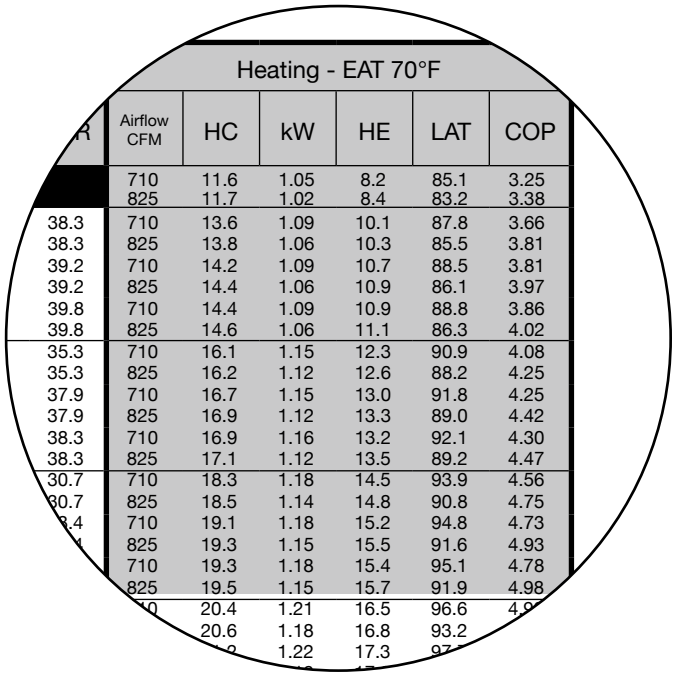
Performance Data – Selection Notes

For operation in the shaded area when water is used in lieu of an antifreeze solution, the LWT (Leaving Water Temperature) must be calculated. Flow must be maintained to a level such that the LWT is maintained above 40°F [4.4°C] when the JW3 jumper is not clipped (see example below). Otherwise, appropriate levels of a proper antifreeze solution should be used in systems with leaving water temperatures of 40°F [4.4°C] or below and the JW3 jumper should be clipped. This is due to the potential of the refrigerant temperature being as low as 32°F [0°C] with 40°F [4.4°C] LWT, which may lead to a nuisance cutout due to the activation of the Low Temperature Protection. JW3 should never be clipped for standard range equipment or systems without antifreeze.



Heating - EAT 70°F

R	Airflow CFM	HC	kW	HE	LAT	COP
	710	11.6	1.05	8.2	85.1	3.25
	825	11.7	1.02	8.4	83.2	3.38
38.3	710	13.6	1.09	10.1	87.8	3.66
38.3	825	13.8	1.06	10.3	85.5	3.81
39.2	710	14.2	1.09	10.7	88.5	3.81
39.2	825	14.4	1.06	10.9	86.1	3.97
39.8	710	14.4	1.09	10.9	88.8	3.86
39.8	825	14.6	1.06	11.1	86.3	4.02
35.3	710	16.1	1.15	12.3	90.9	4.08
35.3	825	16.2	1.12	12.6	88.2	4.25
37.9	710	16.7	1.15	13.0	91.8	4.25
37.9	825	16.9	1.12	13.3	89.0	4.42
38.3	710	16.9	1.16	13.2	92.1	4.30
38.3	825	17.1	1.12	13.5	89.2	4.47
30.7	710	18.3	1.18	14.5	93.9	4.56
30.7	825	18.5	1.14	14.8	90.8	4.75
3.4	710	19.1	1.18	15.2	94.8	4.73
.1	825	19.3	1.15	15.5	91.6	4.93
	710	19.3	1.18	15.4	95.1	4.78
	825	19.5	1.15	15.7	91.9	4.98
	0	20.4	1.21	16.5	96.6	4.9
		20.6	1.18	16.8	93.2	
		.2	1.22	17.3	97.7	

Example:

At 50°F EWT (Entering Water Temperature) and 1.5 GPM/ton, a 3 ton unit has a HE of 22,500 Btuh. To calculate LWT, rearrange the formula for HE as follows:

HE = TD x GPM x 500, where HE = Heat of Extraction (Btuh); TD = temperature difference (EWT - LWT) and GPM = U.S. Gallons per Minute.

TD = HE / (GPM x 500)

TD = 22,500 / (4.5 x 500)

TD = 10°F

LWT = EWT - TD

LWT = 50 - 10 = 40°F

In this example, as long as the EWT does not fall below 50°F, the system will operate as designed. For EWTs below 50°F, higher flow rates will be required (open loop systems, for example, require at least 2 GPM/ton when EWT is below 50°F).

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Performance Data – TR H/V 006

220 CFM Nominal (Rated) Airflow

Performance capacities shown in thousands of Btuh

EWT °F	GPM	WPD		Cooling - EAT 80/67°F							Heating - EAT 70°F					
		PSI	FT	Airflow CFM	TC	SC	Sens/Tot Ratio	kW	HR	EER	Airflow CFM	HC	kW	HE	LAT	COP
20	1.5	1.7	4.0	Operation not recommended							170	4.3	0.49	2.7	93.3	2.6
	1.5	1.7	4.0								225	4.4	0.44	2.9	88.0	2.9
30	0.8	0.5	1.2	170	7.4	4.2	0.57	0.28	8.4	26.4	170	4.6	0.50	3.0	95.2	2.7
	0.8	0.5	1.2	225	7.7	4.8	0.62	0.29	8.7	26.4	225	4.7	0.45	3.2	89.5	3.1
	1.1	0.8	1.8	170	7.4	4.1	0.55	0.26	8.3	28.5	170	4.8	0.51	3.2	96.2	2.8
	1.1	0.8	1.8	225	7.7	4.6	0.60	0.27	8.6	28.5	225	4.9	0.46	3.4	90.3	3.2
	1.5	1.3	2.9	170	7.3	4.0	0.54	0.25	8.2	29.2	170	4.9	0.51	3.2	96.8	2.8
	1.5	1.3	2.9	225	7.6	4.5	0.59	0.26	8.5	29.2	225	5.0	0.46	3.5	90.7	3.2
40	0.8	0.4	0.9	170	7.3	4.3	0.59	0.31	8.3	23.2	170	5.3	0.52	3.6	98.8	3.0
	0.8	0.4	0.9	225	7.6	4.8	0.64	0.33	8.7	23.2	225	5.4	0.47	3.8	92.3	3.4
	1.1	0.6	1.4	170	7.4	4.2	0.57	0.29	8.4	25.8	170	5.5	0.53	3.8	100.2	3.1
	1.1	0.6	1.4	225	7.7	4.8	0.62	0.30	8.7	25.8	225	5.7	0.47	4.1	93.3	3.5
	1.5	1.0	2.4	170	7.4	4.2	0.56	0.28	8.4	26.9	170	5.7	0.53	3.9	100.9	3.1
	1.5	1.0	2.4	225	7.7	4.7	0.61	0.29	8.7	26.9	225	5.8	0.48	4.2	93.9	3.6
50	0.8	0.3	0.8	170	6.9	4.2	0.61	0.35	8.1	19.9	170	6.0	0.54	4.2	102.7	3.3
	0.8	0.3	0.8	225	7.2	4.8	0.66	0.36	8.5	19.9	225	6.1	0.48	4.5	95.3	3.7
	1.1	0.5	1.2	170	7.2	4.3	0.59	0.32	8.3	22.5	170	6.3	0.55	4.5	104.4	3.4
	1.1	0.5	1.2	225	7.5	4.8	0.64	0.33	8.6	22.5	225	6.5	0.49	4.8	96.6	3.9
	1.5	0.9	2.0	170	7.3	4.3	0.58	0.31	8.3	23.8	170	6.5	0.55	4.6	105.4	3.4
	1.5	0.9	2.0	225	7.6	4.8	0.63	0.32	8.7	23.8	225	6.7	0.50	5.0	97.4	3.9
60	0.8	0.3	0.6	170	6.5	4.1	0.63	0.39	7.9	16.8	170	6.7	0.56	4.9	106.7	3.5
	0.8	0.3	0.6	225	6.8	4.7	0.69	0.40	8.2	16.8	225	6.9	0.50	5.2	98.4	4.0
	1.1	0.5	1.0	170	6.9	4.2	0.61	0.36	8.1	19.1	170	7.1	0.57	5.2	108.6	3.7
	1.1	0.5	1.0	225	7.1	4.8	0.67	0.37	8.4	19.1	225	7.3	0.51	5.5	99.9	4.2
	1.5	0.8	1.8	170	7.0	4.2	0.61	0.34	8.2	20.4	170	7.3	0.57	5.3	109.7	3.7
	1.5	0.8	1.8	225	7.3	4.8	0.66	0.36	8.5	20.4	225	7.5	0.51	5.7	100.7	4.3
70	0.8	0.2	0.5	170	6.0	4.0	0.66	0.43	7.5	14.0	170	7.4	0.58	5.5	110.5	3.8
	0.8	0.2	0.5	225	6.3	4.5	0.72	0.45	7.8	14.0	225	7.6	0.52	5.9	101.4	4.3
	1.1	0.4	0.9	170	6.4	4.1	0.64	0.40	7.8	16.0	170	7.8	0.58	5.8	112.4	3.9
	1.1	0.4	0.9	225	6.7	4.6	0.70	0.42	8.1	16.0	225	8.0	0.53	6.2	102.8	4.5
	1.5	0.7	1.6	170	6.6	4.1	0.63	0.38	7.9	17.1	170	8.0	0.59	5.9	113.4	4.0
	1.5	0.7	1.6	225	6.8	4.7	0.69	0.40	8.2	17.1	225	8.2	0.53	6.4	103.6	4.5
80	0.8	0.2	0.5	170	5.6	3.8	0.68	0.47	7.2	12.0	170	7.9	0.59	5.9	113.2	4.0
	0.8	0.2	0.5	225	5.8	4.3	0.74	0.49	7.5	12.0	225	8.1	0.53	6.3	103.5	4.5
	1.1	0.4	0.8	170	5.9	3.9	0.67	0.45	7.4	13.2	170	8.3	0.60	6.3	115.4	4.1
	1.1	0.4	0.8	225	6.1	4.4	0.73	0.46	7.7	13.2	225	8.5	0.54	6.7	105.1	4.6
	1.5	0.6	1.5	170	6.2	4.0	0.65	0.42	7.6	14.7	170	8.4	0.60	6.3	115.7	4.1
	1.5	0.6	1.5	225	6.4	4.6	0.71	0.44	7.9	14.7	225	8.6	0.54	6.7	105.3	4.6
85	0.8	0.2	0.5	170	5.3	3.7	0.70	0.5	7.0	10.7	170	8.2	0.60	6.2	114.7	4.0
	0.8	0.2	0.5	225	5.5	4.2	0.76	0.52	7.3	10.7	225	8.4	0.5	6.6	104.6	4.6
	1.1	0.3	0.8	170	5.6	3.8	0.68	0.47	7.2	11.9	170	8.5	0.6	6.4	116.2	4.1
	1.1	0.3	0.8	225	5.8	4.3	0.74	0.49	7.5	11.9	225	8.7	0.5	6.8	105.8	4.7
	1.5	0.6	1.4	170	5.8	3.9	0.67	0.45	7.4	13.1	170	8.5	0.6	6.4	116.4	4.1
	1.5	0.6	1.4	225	6.1	4.4	0.73	0.47	7.7	13.1	225	8.7	0.5	6.8	105.9	4.7
90	0.8	0.2	0.4	170	5.0	3.6	0.72	0.53	6.7	9.4	170	8.5	0.61	6.4	116.3	4.1
	0.8	0.2	0.4	225	5.2	4.1	0.79	0.55	7.0	9.4	225	8.7	0.55	6.8	105.8	4.7
	1.1	0.3	0.7	170	5.3	3.7	0.70	0.49	7.0	10.7	170	8.6	0.62	6.5	117.0	4.1
	1.1	0.3	0.7	225	5.5	4.2	0.76	0.52	7.3	10.7	225	8.8	0.55	7.0	106.4	4.7
	1.5	0.6	1.3	170	5.5	3.8	0.69	0.48	7.1	11.5	170	8.7	0.62	6.5	117.1	4.1
	1.5	0.6	1.3	225	5.7	4.3	0.75	0.50	7.4	11.5	225	8.9	0.56	7.0	106.5	4.7
100	0.8	0.2	0.4	170	4.4	3.4	0.76	0.58	6.4	7.6	Operation not recommended					
	0.8	0.2	0.4	225	4.6	3.8	0.83	0.60	6.6	7.6						
	1.1	0.3	0.7	170	4.7	3.5	0.74	0.55	6.6	8.7						
	1.1	0.3	0.7	225	4.9	4.0	0.80	0.57	6.9	8.7						
	1.5	0.5	1.2	170	4.9	3.6	0.73	0.53	6.7	9.3						
	1.5	0.5	1.2	225	5.1	4.0	0.79	0.55	7.0	9.3						
110	0.8	0.2	0.3	170	3.9	3.1	0.81	0.63	6.0	6.2						
	0.8	0.2	0.3	225	4.1	3.6	0.87	0.66	6.3	6.2						
	1.1	0.3	0.6	170	4.2	3.3	0.78	0.60	6.2	7.0						
	1.1	0.3	0.6	225	4.4	3.7	0.85	0.62	6.5	7.0						
	1.5	0.5	1.2	170	4.3	3.3	0.77	0.58	6.3	7.4						
	1.5	0.5	1.2	225	4.5	3.8	0.83	0.61	6.6	7.4						
120	0.8	0.1	0.3	170	3.5	3.0	0.85	0.68	5.8	5.0						
	0.8	0.1	0.3	225	3.6	3.3	0.93	0.71	6.0	5.0						
	1.1	0.3	0.6	170	3.7	3.0	0.83	0.65	5.9	5.6						
	1.1	0.3	0.6	225	3.8	3.4	0.90	0.68	6.2	5.6						
	1.5	0.5	1.1	170	3.8	3.1	0.81	0.64	6.0	6.0						
	1.5	0.5	1.1	225	4.0	3.5	0.88	0.67	6.2	6.0						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
AHRI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.
Table does not reflect fan or pump power corrections for AHRI/ISO conditions.
All performance is based upon the lower voltage of dual voltage rated units.
Performance stated is at the rated power supply; performance may vary as the power supply varies from the rated.
Operation below 40°F EWT is based upon a 15% methanol antifreeze solution.
Operation below 60°F EWT requires optional insulated water/refrigerant circuit.
See performance correction tables for operating conditions other than those listed above.
See Performance Data Selection Notes for operation in the shaded areas.

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Performance Data – TR H/V 009

325 CFM Nominal (Rated) Airflow

Performance capacities shown in thousands of Btuh

EWT °F	GPM	WPD		Cooling - EAT 80/67°F							Heating - EAT 70°F					
		PSI	FT	Airflow CFM	TC	SC	Sens/Tot Ratio	kW	HR	EER	Airflow CFM	HC	kW	HE	LAT	COP
20	2.3	4.5	10.5	Operation not recommended							250	6.5	0.73	4.2	94.2	2.6
	2.3	4.5	10.5								330	6.7	0.66	4.4	88.8	3.0
30	1.1	1.3	3.0	250	10.2	6.0	0.59	0.39	11.6	26.6	250	7.1	0.74	4.7	96.3	2.8
	1.1	1.3	3.0	330	10.7	6.8	0.64	0.40	12.0	26.6	330	7.3	0.67	5.0	90.4	3.2
	1.7	1.9	4.4	250	10.5	6.0	0.57	0.36	11.7	29.5	250	7.4	0.75	4.9	97.4	2.9
	1.7	1.9	4.4	330	10.9	6.8	0.62	0.37	12.2	29.5	330	7.6	0.67	5.3	91.2	3.3
	2.3	3.5	8.1	250	10.6	6.0	0.56	0.34	11.8	31.1	250	7.5	0.75	5.1	97.9	2.9
	2.3	3.5	8.1	330	11.0	6.8	0.61	0.36	12.3	31.1	330	7.7	0.68	5.4	91.7	3.4
40	1.1	0.9	2.0	250	9.9	6.0	0.61	0.43	11.3	22.8	250	8.0	0.76	5.5	99.8	3.1
	1.1	0.9	2.0	330	10.3	6.8	0.66	0.45	11.8	22.8	330	8.2	0.69	5.9	93.1	3.5
	1.7	1.5	3.5	250	10.1	6.0	0.59	0.40	11.5	25.4	250	8.4	0.77	5.8	101.1	3.2
	1.7	1.5	3.5	330	10.5	6.8	0.64	0.41	12.0	25.4	330	8.6	0.69	6.2	94.1	3.6
	2.3	3.0	6.8	250	10.3	6.0	0.59	0.38	11.6	26.8	250	8.6	0.78	6.0	101.8	3.2
	2.3	3.0	6.8	330	10.7	6.8	0.64	0.40	12.0	26.9	330	8.8	0.70	6.4	94.7	3.7
50	1.1	0.6	1.5	250	9.4	6.0	0.63	0.48	11.1	19.5	250	9.0	0.79	6.4	103.3	3.4
	1.1	0.6	1.5	330	9.8	6.7	0.69	0.50	11.6	19.5	330	9.2	0.71	6.8	95.8	3.8
	1.7	1.3	2.9	250	9.7	6.0	0.62	0.45	11.3	21.7	250	9.4	0.80	6.7	104.8	3.5
	1.7	1.3	2.9	330	10.1	6.8	0.67	0.47	11.7	21.7	330	9.6	0.72	7.2	97.0	3.9
	2.3	2.6	6.0	250	9.9	6.0	0.61	0.43	11.3	23.0	250	9.6	0.80	6.9	105.6	3.5
	2.3	2.6	6.0	330	10.3	6.8	0.66	0.45	11.8	23.0	330	9.8	0.72	7.4	97.6	4.0
60	1.1	0.5	1.2	250	9.0	5.9	0.65	0.54	10.8	16.5	250	9.9	0.81	7.2	106.8	3.6
	1.1	0.5	1.2	330	9.4	6.7	0.71	0.57	11.3	16.5	330	10.2	0.73	7.7	98.5	4.1
	1.7	1.1	2.5	250	9.3	5.9	0.64	0.50	11.0	18.5	250	10.4	0.82	7.6	108.4	3.7
	1.7	1.1	2.5	330	9.7	6.7	0.69	0.52	11.5	18.5	330	10.6	0.74	8.1	99.8	4.2
	2.3	2.3	5.4	250	9.5	6.0	0.63	0.48	11.1	19.6	250	10.6	0.83	7.8	109.3	3.7
	2.3	2.3	5.4	330	9.8	6.7	0.69	0.50	11.6	19.6	330	10.9	0.75	8.3	100.5	4.3
70	1.1	0.4	0.9	250	8.5	5.8	0.68	0.61	10.6	14.0	250	10.8	0.84	8.0	110.1	3.8
	1.1	0.4	0.9	330	8.8	6.5	0.74	0.63	11.0	14.0	330	11.1	0.75	8.5	101.1	4.3
	1.7	1.0	2.3	250	8.8	5.8	0.66	0.56	10.7	15.6	250	11.3	0.85	8.4	111.9	3.9
	1.7	1.0	2.3	330	9.2	6.6	0.72	0.59	11.2	15.6	330	11.6	0.77	9.0	102.5	4.4
	2.3	2.1	4.9	250	9.1	5.9	0.65	0.53	10.9	17.1	250	11.4	0.85	8.5	112.1	3.9
	2.3	2.1	4.9	330	9.5	6.7	0.71	0.55	11.3	17.1	330	11.6	0.77	9.0	102.7	4.4
80	1.1	0.3	0.8	250	8.0	5.6	0.70	0.67	10.3	11.8	250	11.7	0.87	8.7	113.3	4.0
	1.1	0.3	0.8	330	8.3	6.3	0.77	0.70	10.7	11.8	330	12.0	0.78	9.3	103.6	4.5
	1.7	0.9	2.1	250	8.3	5.7	0.69	0.63	10.5	13.2	250	12.2	0.88	9.1	115.1	4.0
	1.7	0.9	2.1	330	8.6	6.5	0.75	0.66	10.9	13.2	330	12.5	0.79	9.8	105.0	4.6
	2.3	2.0	4.6	250	8.6	5.8	0.67	0.59	10.6	14.4	250	12.2	0.88	9.2	115.4	4.1
	2.3	2.0	4.6	330	8.9	6.5	0.73	0.62	11.1	14.4	330	12.5	0.79	9.8	105.2	4.6
85	1.1	0.3	0.7	250	7.7	5.5	0.71	0.7	10.1	11.0	250	12.0	0.88	9.0	114.5	4.0
	1.1	0.3	0.7	330	8.0	6.2	0.78	0.73	10.5	11.0	330	12.3	0.8	9.6	104.6	4.6
	1.7	0.9	2.0	250	8.0	5.6	0.70	0.67	10.3	12.1	250	12.6	0.9	9.5	116.5	4.1
	1.7	0.9	2.0	330	8.4	6.4	0.76	0.69	10.7	12.1	330	12.9	0.8	10.1	106.1	4.7
	2.3	1.9	4.4	250	8.3	5.7	0.69	0.63	10.5	13.3	250	12.6	0.9	9.5	116.8	4.1
	2.3	1.9	4.4	330	8.7	6.5	0.75	0.65	10.9	13.3	330	12.9	0.8	10.2	106.3	4.7
90	1.1	0.3	0.6	250	7.5	5.4	0.72	0.73	10.0	10.2	250	12.3	0.89	9.3	115.7	4.1
	1.1	0.3	0.6	330	7.8	6.2	0.79	0.76	10.4	10.2	330	12.6	0.80	9.9	105.5	4.6
	1.7	0.8	1.9	250	7.7	5.5	0.71	0.70	10.1	11.1	250	12.9	0.91	9.8	117.9	4.2
	1.7	0.8	1.9	330	8.1	6.3	0.78	0.73	10.6	11.1	330	13.3	0.82	10.5	107.2	4.8
	2.3	1.8	4.3	250	8.0	5.6	0.70	0.66	10.3	12.1	250	13.0	0.91	9.9	118.2	4.2
	2.3	1.8	4.3	330	8.4	6.4	0.76	0.69	10.7	12.1	330	13.3	0.82	10.5	107.4	4.8
100	1.1	0.2	0.6	250	6.8	5.1	0.76	0.82	9.6	8.2	Operation not recommended					
	1.1	0.2	0.6	330	7.0	5.8	0.82	0.86	10.0	8.2						
	1.7	0.8	1.7	250	7.1	5.3	0.74	0.78	9.8	9.2						
	1.7	0.8	1.7	330	7.4	6.0	0.81	0.81	10.2	9.2						
	2.3	1.7	4.0	250	7.3	5.4	0.73	0.75	9.9	9.7						
	2.3	1.7	4.0	330	7.6	6.1	0.80	0.78	10.3	9.7						
110	1.1	0.2	0.5	250	6.1	4.8	0.79	0.90	9.2	6.8						
	1.1	0.2	0.5	330	6.3	5.4	0.85	0.94	9.5	6.8						
	1.7	0.7	1.6	250	6.5	5.0	0.77	0.86	9.4	7.6						
	1.7	0.7	1.6	330	6.8	5.6	0.84	0.89	9.8	7.6						
	2.3	1.6	3.8	250	6.7	5.1	0.76	0.83	9.5	8.0						
	2.3	1.6	3.8	330	7.0	5.8	0.83	0.87	9.9	8.0						
120	1.1	0.2	0.4	250	5.4	4.4	0.82	0.98	8.7	5.5						
	1.1	0.2	0.4	330	5.6	5.0	0.89	1.02	9.1	5.5						
	1.7	0.7	1.6	250	5.8	4.6	0.80	0.94	9.0	6.2						
	1.7	0.7	1.6	330	6.0	5.2	0.87	0.98	9.4	6.2						
	2.3	1.6	3.6	250	6.0	4.7	0.79	0.91	9.1	6.5						
	2.3	1.6	3.6	330	6.2	5.4	0.86	0.95	9.5	6.5						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
AHRI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.
Table does not reflect fan or pump power corrections for AHRI/ISO conditions.
All performance is based upon the lower voltage of dual voltage rated units.
Performance stated is at the rated power supply; performance may vary as the power supply varies from the rated.
Operation below 40°F EWT is based upon a 15% methanol antifreeze solution.
Operation below 60°F EWT requires optional insulated water/refrigerant circuit.
See performance correction tables for operating conditions other than those listed above.
See Performance Data Selection Notes for operation in the shaded areas.

ClimateMaster works continually to improve its products. As a result, the design and specifications of each product at the time of order may be changed without notice and may not be as described herein. Please contact ClimateMaster's Customer Service Department at 1-405-745-6000 for specific information on the current design and specifications. Statements and other information contained herein are not express warranties and do not form the basis of any bargain between the parties, but are merely ClimateMaster's opinion or commendation of its products. The latest version of this document is available at **climatemaster.com.**

Performance Data – TR H/V 012

400 CFM Nominal (Rated) Airflow

Performance capacities shown in thousands of Btuh

EWT °F	GPM	WPD		Cooling - EAT 80/67°F							Heating - EAT 70°F					
		PSI	FT	Airflow CFM	TC	SC	Sens/Tot Ratio	kW	HR	EER	Airflow CFM	HC	kW	HE	LAT	COP
20	3.0	8.5	19.6	Operation not recommended							300	8.5	0.98	5.3	96.2	2.5
	3.0	8.5	19.6								400	8.7	0.88	5.7	90.2	2.9
30	1.5	1.9	4.3	300	14.2	8.2	0.58	0.55	16.1	25.8	300	9.3	1.00	6.0	98.6	2.7
	1.5	1.9	4.3	400	14.8	9.3	0.63	0.57	16.8	25.8	400	9.5	0.90	6.4	91.9	3.1
	2.3	3.6	8.4	300	14.3	8.2	0.58	0.51	16.1	27.9	300	9.6	1.01	6.3	99.7	2.8
	2.3	3.6	8.4	400	14.9	9.3	0.63	0.53	16.7	27.9	400	9.9	0.91	6.8	92.8	3.2
	3.0	6.7	15.5	300	14.3	8.2	0.58	0.50	16.0	28.8	300	9.8	1.02	6.5	100.4	2.8
	3.0	6.7	15.5	400	14.9	9.3	0.63	0.52	16.6	28.8	400	10.1	0.92	7.0	93.3	3.2
40	1.5	1.4	3.2	300	14.0	8.1	0.58	0.61	16.0	22.9	300	10.6	1.04	7.1	102.6	3.0
	1.5	1.4	3.2	400	14.5	9.2	0.63	0.63	16.7	22.9	400	10.8	0.93	7.6	95.0	3.4
	2.3	3.0	6.9	300	14.2	8.2	0.58	0.57	16.1	25.1	300	11.0	1.05	7.6	104.1	3.1
	2.3	3.0	6.9	400	14.8	9.3	0.63	0.59	16.8	25.1	400	11.3	0.94	8.1	96.2	3.5
	3.0	5.7	13.1	300	14.3	8.2	0.58	0.54	16.1	26.2	300	11.3	1.06	7.8	104.9	3.1
	3.0	5.7	13.1	400	14.8	9.3	0.63	0.57	16.8	26.2	400	11.6	0.95	8.3	96.8	3.6
50	1.5	1.1	2.5	300	13.5	7.9	0.58	0.67	15.8	20.1	300	11.9	1.08	8.3	106.8	3.2
	1.5	1.1	2.5	400	14.1	8.9	0.63	0.70	16.5	20.1	400	12.2	0.97	8.9	98.2	3.7
	2.3	2.6	6.0	300	13.9	8.0	0.58	0.62	16.0	22.2	300	12.5	1.09	8.9	108.6	3.4
	2.3	2.6	6.0	400	14.4	9.1	0.63	0.65	16.7	22.2	400	12.8	0.98	9.5	99.6	3.8
	3.0	5.0	11.5	300	14.0	8.1	0.58	0.60	16.1	23.3	300	12.8	1.10	9.1	109.6	3.4
	3.0	5.0	11.5	400	14.6	9.2	0.63	0.63	16.7	23.3	400	13.1	0.99	9.8	100.4	3.9
60	1.5	0.9	2.1	300	12.9	7.6	0.59	0.74	15.5	17.4	300	13.3	1.11	9.6	111.1	3.5
	1.5	0.9	2.1	400	13.5	8.6	0.64	0.77	16.1	17.4	400	13.6	1.00	10.2	101.5	4.0
	2.3	2.3	5.3	300	13.4	7.8	0.58	0.69	15.7	19.3	300	14.0	1.13	10.2	113.1	3.6
	2.3	2.3	5.3	400	13.9	8.8	0.63	0.72	16.4	19.3	400	14.3	1.02	10.8	103.1	4.1
	3.0	4.5	10.3	300	13.6	7.9	0.58	0.67	15.8	20.4	300	14.3	1.14	10.5	114.2	3.7
	3.0	4.5	10.3	400	14.1	8.9	0.63	0.69	16.5	20.4	400	14.7	1.03	11.2	104.0	4.2
70	1.5	0.8	1.8	300	12.2	7.3	0.60	0.82	15.0	14.9	300	14.7	1.15	10.8	115.3	3.7
	1.5	0.8	1.8	400	12.7	8.3	0.65	0.85	15.6	14.9	400	15.0	1.04	11.5	104.8	4.2
	2.3	2.1	4.8	300	12.5	7.4	0.59	0.77	15.2	16.3	300	15.4	1.18	11.4	117.6	3.8
	2.3	2.1	4.8	400	13.1	8.4	0.64	0.80	15.8	16.3	400	15.8	1.06	12.2	106.5	4.4
	3.0	4.1	9.5	300	12.7	7.5	0.59	0.75	15.3	17.0	300	15.8	1.19	11.7	118.8	3.9
	3.0	4.1	9.5	400	13.3	8.5	0.64	0.78	15.9	17.0	400	16.2	1.07	12.5	107.5	4.4
80	1.5	0.7	1.5	300	11.4	7.0	0.61	0.90	14.5	12.7	300	16.0	1.20	11.9	119.4	3.9
	1.5	0.7	1.5	400	11.9	7.9	0.67	0.94	15.1	12.7	400	16.4	1.08	12.7	108.0	4.5
	2.3	1.9	4.4	300	11.8	7.1	0.60	0.85	14.7	13.9	300	16.8	1.22	12.6	121.7	4.0
	2.3	1.9	4.4	400	12.3	8.0	0.65	0.88	15.3	13.9	400	17.2	1.10	13.4	109.8	4.6
	3.0	3.8	8.8	300	12.0	7.2	0.60	0.83	14.8	14.5	300	17.2	1.24	12.9	123.0	4.1
	3.0	3.8	8.8	400	12.5	8.1	0.65	0.86	15.4	14.5	400	17.6	1.11	13.8	110.7	4.6
85	1.5	0.6	1.5	300	10.9	6.8	0.62	0.9	14.2	11.7	300	16.6	1.22	12.5	121.3	4.0
	1.5	0.6	1.5	400	11.4	7.7	0.68	0.98	14.7	11.7	400	17.0	1.1	13.3	109.4	4.6
	2.3	1.8	4.2	300	11.4	6.9	0.61	0.89	14.4	12.8	300	17.4	1.3	13.1	123.6	4.1
	2.3	1.8	4.2	400	11.9	7.9	0.66	0.93	15.0	12.8	400	17.8	1.1	14.0	111.2	4.6
	3.0	3.7	8.5	300	11.6	7.0	0.60	0.87	14.5	13.4	300	17.7	1.3	13.4	124.8	4.1
	3.0	3.7	8.5	400	12.1	7.9	0.66	0.90	15.1	13.4	400	18.2	1.1	14.3	112.1	4.7
90	1.5	0.6	1.4	300	10.5	6.7	0.63	0.99	13.9	10.7	300	17.3	1.24	13.0	123.3	4.1
	1.5	0.6	1.4	400	10.9	7.5	0.69	1.03	14.4	10.7	400	17.7	1.12	13.9	110.9	4.6
	2.3	1.8	4.1	300	11.0	6.8	0.62	0.93	14.1	11.7	300	18.0	1.28	13.6	125.5	4.1
	2.3	1.8	4.1	400	11.4	7.7	0.67	0.97	14.7	11.7	400	18.4	1.15	14.5	112.6	4.7
	3.0	3.6	8.2	300	11.2	6.8	0.61	0.91	14.3	12.3	300	18.3	1.29	13.9	126.6	4.2
	3.0	3.6	8.2	400	11.6	7.7	0.67	0.95	14.8	12.3	400	18.8	1.16	14.8	113.5	4.7
100	1.5	0.5	1.2	300	9.5	6.4	0.67	1.07	13.2	8.9	Operation not recommended					
	1.5	0.5	1.2	400	9.9	7.2	0.72	1.12	13.8	8.9						
	2.3	1.7	3.8	300	10.1	6.5	0.65	1.02	13.5	9.8						
	2.3	1.7	3.8	400	10.5	7.3	0.70	1.06	14.1	9.8						
	3.0	3.3	7.7	300	10.4	6.6	0.64	1.00	13.8	10.4						
	3.0	3.3	7.7	400	10.8	7.5	0.69	1.04	14.3	10.4						
110	1.5	0.5	1.1	300	8.5	6.0	0.71	1.17	12.5	7.3						
	1.5	0.5	1.1	400	8.9	6.8	0.77	1.22	13.1	7.3						
	2.3	1.6	3.6	300	9.1	6.2	0.68	1.12	12.9	8.1						
	2.3	1.6	3.6	400	9.4	7.0	0.74	1.16	13.4	8.1						
	3.0	3.2	7.3	300	9.4	6.3	0.67	1.09	13.1	8.6						
	3.0	3.2	7.3	400	9.8	7.1	0.73	1.14	13.7	8.6						
120	1.5	0.4	1.0	300	7.5	5.7	0.76	1.27	11.8	5.9						
	1.5	0.4	1.0	400	7.8	6.4	0.82	1.32	12.3	5.9						
	2.3	1.5	3.4	300	8.0	5.8	0.73	1.22	12.2	6.6						
	2.3	1.5	3.4	400	8.3	6.6	0.79	1.27	12.7	6.6						
	3.0	3.0	7.0	300	8.3	5.9	0.71	1.19	12.4	7.0						
	3.0	3.0	7.0	400	8.7	6.7	0.77	1.24	12.9	7.0						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
AHRI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.
Table does not reflect fan or pump power corrections for AHRI/ISO conditions.
All performance is based upon the lower voltage of dual voltage rated units.
Performance stated is at the rated power supply; performance may vary as the power supply varies from the rated.
Operation below 40°F EWT is based upon a 15% methanol antifreeze solution.
Operation below 60°F EWT requires optional insulated water/refrigerant circuit.
See performance correction tables for operating conditions other than those listed above.
See Performance Data Selection Notes for operation in the shaded areas.

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Performance Data – TR H/V 015

525 CFM Nominal (Rated) Airflow

Performance capacities shown in thousands of Btuh

EWT °F	GPM	WPD		Cooling - EAT 80/67°F							Heating - EAT 70°F					
		PSI	FT	Airflow CFM	TC	SC	Sens/Tot Ratio	kW	HR	EER	Airflow CFM	HC	kW	HE	LAT	COP
20	3.8	4.1	9.5	Operation not recommended							395	9.5	1.07	6.1	92	2.62
	3.8	4.1	9.5								525	9.8	0.96	6.5	87	2.98
30	1.9	1.0	2.3	395	17.3	10.8	0.62	0.61	19.4	28.4	395	10.6	1.09	7.1	95	2.84
	1.9	1.0	2.3	525	18.1	12.2	0.67	0.64	20.2	28.4	525	10.9	0.98	7.5	89	3.24
	2.8	1.8	4.3	395	17.5	10.8	0.62	0.56	19.4	31.1	395	11.1	1.11	7.5	96	2.94
	2.8	1.8	4.3	525	18.2	12.2	0.67	0.59	20.2	31.1	525	11.4	0.99	8.0	90	3.35
	3.8	3.3	7.7	395	17.5	10.8	0.62	0.54	19.4	32.2	395	11.3	1.11	7.7	97	2.99
	3.8	3.3	7.7	525	18.3	12.2	0.67	0.57	20.2	32.2	525	11.6	1.00	8.2	90	3.41
40	1.9	0.8	1.8	395	17.0	10.6	0.63	0.68	19.3	24.8	395	12.3	1.13	8.5	99	3.18
	1.9	0.8	1.8	525	17.7	12.0	0.68	0.71	20.1	24.8	525	12.6	1.02	9.1	92	3.62
	2.8	1.6	3.6	395	17.2	10.7	0.62	0.63	19.4	27.3	395	12.8	1.14	9.0	100	3.29
	2.8	1.6	3.6	525	18.0	12.1	0.68	0.66	20.2	27.3	525	13.1	1.03	9.7	93	3.75
	3.8	2.9	6.6	395	17.4	10.8	0.62	0.60	19.4	28.8	395	13.1	1.15	9.3	101	3.35
	3.8	2.9	6.6	525	18.1	12.2	0.67	0.63	20.2	28.8	525	13.5	1.03	10.0	94	3.82
50	1.9	0.6	1.5	395	16.4	10.4	0.63	0.76	19.0	21.6	395	13.9	1.16	10.0	103	3.50
	1.9	0.6	1.5	525	17.1	11.8	0.69	0.79	19.8	21.6	525	14.2	1.05	10.7	95	3.99
	2.8	1.4	3.1	395	16.8	10.6	0.63	0.71	19.2	23.8	395	14.6	1.18	10.6	104	3.63
	2.8	1.4	3.1	525	17.5	12.0	0.68	0.74	20.0	23.8	525	14.9	1.06	11.3	96	4.13
	3.8	2.5	5.8	395	17.0	10.6	0.63	0.68	19.3	25.0	395	14.9	1.18	10.9	105	3.69
	3.8	2.5	5.8	525	17.7	12.0	0.68	0.71	20.1	25.0	525	15.3	1.06	11.7	97	4.21
60	1.9	0.6	1.3	395	15.7	10.2	0.65	0.84	18.6	18.7	395	15.5	1.20	11.5	106	3.81
	1.9	0.6	1.3	525	16.4	11.5	0.70	0.88	19.4	18.7	525	15.9	1.07	12.2	98	4.34
	2.8	1.2	2.8	395	16.2	10.4	0.64	0.79	18.9	20.5	395	16.3	1.21	12.1	108	3.94
	2.8	1.2	2.8	525	16.9	11.7	0.69	0.82	19.7	20.5	525	16.7	1.09	13.0	99	4.50
	3.8	2.3	5.3	395	16.4	10.4	0.63	0.76	19.0	21.6	395	16.7	1.22	12.5	109	4.02
	3.8	2.3	5.3	525	17.1	11.8	0.69	0.79	19.8	21.6	525	17.1	1.09	13.3	100	4.58
70	1.9	0.5	1.1	395	15.2	10.1	0.66	0.93	18.3	16.2	395	17.1	1.22	12.9	110	4.10
	1.9	0.5	1.1	525	15.8	11.4	0.72	0.97	19.1	16.3	525	17.5	1.10	13.8	101	4.68
	2.8	1.1	2.5	395	15.5	10.1	0.65	0.88	18.5	17.6	395	18.0	1.24	13.7	112	4.25
	2.8	1.1	2.5	525	16.1	11.4	0.71	0.91	19.2	17.6	525	18.4	1.11	14.6	102	4.85
	3.8	2.1	4.9	395	15.8	10.2	0.65	0.85	18.6	18.6	395	18.4	1.25	14.1	113	4.33
	3.8	2.1	4.9	525	16.4	11.5	0.70	0.88	19.4	18.6	525	18.8	1.12	15.0	103	4.94
80	1.9	0.4	1.0	395	14.3	9.8	0.68	1.03	17.8	13.9	395	18.7	1.25	14.3	114	4.38
	1.9	0.4	1.0	525	14.9	11.1	0.74	1.07	18.5	13.9	525	19.2	1.12	15.3	104	5.00
	2.8	1.0	2.4	395	14.7	9.8	0.67	0.97	18.0	15.1	395	19.6	1.27	15.1	116	4.54
	2.8	1.0	2.4	525	15.3	11.1	0.73	1.01	18.7	15.1	525	20.1	1.14	16.2	105	5.18
	3.8	2.0	4.6	395	14.9	9.9	0.66	0.94	18.2	15.9	395	20.1	1.27	15.6	117	4.62
	3.8	2.0	4.6	525	15.6	11.2	0.72	0.98	18.9	15.9	525	20.6	1.14	16.6	106	5.27
85	1.9	0.4	0.9	395	13.8	9.6	0.70	1.1	17.5	12.8	395	19.5	1.26	15.0	116	4.52
	1.9	0.4	0.9	525	14.4	10.9	0.76	1.13	18.2	12.8	525	19.9	1.13	16.0	105	5.15
	2.8	1.0	2.3	395	14.2	9.7	0.68	1.02	17.7	13.9	395	20.4	1.28	15.9	118	4.68
	2.8	1.0	2.3	525	14.8	11.0	0.74	1.07	18.4	13.9	525	20.9	1.15	16.9	107	5.34
	3.8	1.9	4.4	395	14.5	9.8	0.67	0.99	17.9	14.7	395	20.9	1.29	16.3	119	4.77
	3.8	1.9	4.4	525	15.1	11.1	0.73	1.03	18.6	14.7	525	21.4	1.15	17.4	108	5.43
90	1.9	0.4	0.9	395	13.3	9.5	0.71	1.14	17.2	11.7	395	20.2	1.28	15.7	117	4.65
	1.9	0.4	0.9	525	13.9	10.7	0.77	1.19	18.0	11.7	525	20.7	1.15	16.8	107	5.30
	2.8	1.0	2.2	395	13.7	9.5	0.69	1.08	17.4	12.8	395	21.2	1.29	16.6	120	4.82
	2.8	1.0	2.2	525	14.3	10.8	0.75	1.12	18.1	12.8	525	21.7	1.16	17.7	108	5.49
	3.8	1.9	4.3	395	14.1	9.6	0.69	1.04	17.6	13.5	395	21.7	1.30	17.1	121	4.90
	3.8	1.9	4.3	525	14.6	10.9	0.74	1.08	18.3	13.5	525	22.2	1.17	18.2	109	5.59
100	1.9	0.4	0.8	395	12.4	9.2	0.74	1.25	16.6	9.9	Operation not recommended					
	1.9	0.4	0.8	525	12.9	10.4	0.80	1.31	17.3	9.9						
	2.8	0.9	2.1	395	12.8	9.2	0.72	1.19	16.8	10.8						
	2.8	0.9	2.1	525	13.3	10.4	0.78	1.23	17.5	10.8						
	3.8	1.8	4.1	395	13.1	9.3	0.71	1.15	17.0	11.4						
	3.8	1.8	4.1	525	13.6	10.5	0.77	1.20	17.7	11.4						
110	1.9	0.3	0.7	395	11.3	8.8	0.78	1.37	16.0	8.3						
	1.9	0.3	0.7	525	11.8	10.0	0.84	1.43	16.7	8.3						
	2.8	0.8	1.9	395	11.8	8.9	0.75	1.30	16.2	9.0						
	2.8	0.8	1.9	525	12.2	10.0	0.82	1.36	16.9	9.0						
	3.8	1.7	3.9	395	12.1	9.0	0.74	1.27	16.4	9.5						
	3.8	1.7	3.9	525	12.6	10.2	0.81	1.32	17.1	9.5						
120	1.9	0.3	0.7	395	10.3	8.5	0.82	1.50	15.5	6.9						
	1.9	0.3	0.7	525	10.8	9.6	0.89	1.56	16.1	6.9						
	2.8	0.8	1.8	395	10.7	8.5	0.79	1.43	15.6	7.5						
	2.8	0.8	1.8	525	11.2	9.6	0.86	1.48	16.2	7.5						
	3.8	1.6	3.7	395	11.0	8.6	0.78	1.39	15.8	7.9						
	3.8	1.6	3.7	525	11.5	9.8	0.85	1.45	16.4	7.9						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
AHRI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.
Table does not reflect fan or pump power corrections for AHRI/ISO conditions.
All performance is based upon the lower voltage of dual voltage rated units.
Performance stated is at the rated power supply; performance may vary as the power supply varies from the rated.
Operation below 40°F EWT is based upon a 15% methanol antifreeze solution.
Operation below 60°F EWT requires optional insulated water/refrigerant circuit.
See performance correction tables for operating conditions other than those listed above.
See Performance Data Selection Notes for operation in the shaded areas.

ClimateMaster works continually to improve its products. As a result, the design and specifications of each product at the time of order may be changed without notice and may not be as described herein. Please contact ClimateMaster's Customer Service Department at 1-405-745-6000 for specific information on the current design and specifications. Statements and other information contained herein are not express warranties and do not form the basis of any bargain between the parties, but are merely ClimateMaster's opinion or commendation of its products. The latest version of this document is available at **climatemaster.com.**

Performance Data – TR H/V 018

600 CFM Nominal (Rated) Airflow

Performance capacities shown in thousands of Btuh

EWT °F	GPM	WPD		Cooling - EAT 80/67°F							Heating - EAT 70°F					
		PSI	FT	Airflow CFM	TC	SC	Sens/Tot Ratio	kW	HR	EER	Airflow CFM	HC	kW	HE	LAT	COP
20	4.5	7.2	16.7	Operation not recommended							450	11.2	1.25	7.2	93	2.61
	4.5	7.2	16.7								600	11.4	1.13	7.6	88	2.98
30	2.3	2.1	4.9	450	22.1	14.2	0.64	0.72	24.5	30.7	450	12.4	1.29	8.2	96	2.83
	2.3	2.1	4.9	600	23.0	16.1	0.70	0.75	25.5	30.8	600	12.7	1.16	8.8	90	3.22
	3.4	3.4	7.9	450	22.9	14.4	0.63	0.64	25.1	35.8	450	12.9	1.30	8.7	97	2.92
	3.4	3.4	7.9	600	23.9	16.3	0.68	0.67	26.1	35.8	600	13.3	1.17	9.3	90	3.33
	4.5	5.9	13.7	450	23.3	14.4	0.62	0.60	25.3	39.0	450	13.2	1.31	9.0	97	2.97
	4.5	5.9	13.7	600	24.3	16.3	0.67	0.62	26.4	39.0	600	13.5	1.17	9.6	91	3.38
40	2.3	1.7	3.9	450	21.1	13.9	0.66	0.82	23.9	25.6	450	14.3	1.33	9.9	99	3.15
	2.3	1.7	3.9	600	22.0	15.7	0.72	0.86	24.9	25.6	600	14.7	1.20	10.6	93	3.59
	3.4	2.9	6.7	450	21.9	14.2	0.65	0.75	24.4	29.3	450	15.0	1.35	10.5	101	3.26
	3.4	2.9	6.7	600	22.8	16.0	0.70	0.78	25.4	29.3	600	15.3	1.21	11.2	94	3.72
	4.5	5.1	11.8	450	22.5	14.5	0.64	0.71	24.9	31.9	450	15.3	1.35	10.8	102	3.32
	4.5	5.1	11.8	600	23.5	16.4	0.70	0.74	25.9	31.9	600	15.7	1.22	11.6	94	3.78
50	2.3	1.4	3.3	450	20.4	13.7	0.67	0.93	23.5	21.9	450	16.3	1.37	11.7	103	3.47
	2.3	1.4	3.3	600	21.2	15.5	0.73	0.97	24.5	22.0	600	16.6	1.23	12.5	96	3.96
	3.4	2.6	5.9	450	20.8	13.8	0.66	0.85	23.7	24.4	450	17.0	1.39	12.4	105	3.60
	3.4	2.6	5.9	600	21.7	15.6	0.72	0.89	24.7	24.4	600	17.4	1.25	13.2	97	4.10
	4.5	4.6	10.6	450	21.2	13.9	0.66	0.81	23.9	26.1	450	17.4	1.39	12.7	106	3.67
	4.5	4.6	10.6	600	22.1	15.8	0.72	0.85	24.9	26.1	600	17.9	1.25	13.6	98	4.18
60	2.3	1.3	2.9	450	19.3	13.2	0.68	1.04	22.8	18.6	450	18.2	1.41	13.4	107	3.79
	2.3	1.3	2.9	600	20.1	14.9	0.74	1.08	23.8	18.6	600	18.6	1.26	14.3	99	4.32
	3.4	2.3	5.3	450	19.8	13.4	0.68	0.96	23.0	20.6	450	19.1	1.42	14.2	109	3.93
	3.4	2.3	5.3	600	20.6	15.1	0.73	1.00	24.0	20.6	600	19.6	1.28	15.2	100	4.49
	4.5	4.2	9.6	450	20.1	13.5	0.67	0.92	23.3	21.9	450	19.6	1.43	14.7	110	4.01
	4.5	4.2	9.6	600	21.0	15.3	0.73	0.96	24.2	21.9	600	20.1	1.29	15.7	101	4.58
70	2.3	1.1	2.6	450	18.2	12.7	0.69	1.15	22.1	15.8	450	20.2	1.44	15.2	112	4.11
	2.3	1.1	2.6	600	19.0	14.3	0.76	1.20	23.1	15.8	600	20.7	1.29	16.2	102	4.68
	3.4	2.1	4.9	450	18.7	12.8	0.69	1.07	22.3	17.4	450	21.2	1.46	16.1	114	4.27
	3.4	2.1	4.9	600	19.4	14.5	0.75	1.12	23.2	17.4	600	21.7	1.31	17.2	103	4.86
	4.5	3.9	8.9	450	19.1	13.0	0.68	1.03	22.6	18.4	450	21.7	1.46	16.6	115	4.35
	4.5	3.9	8.9	600	19.8	14.7	0.74	1.08	23.5	18.4	600	22.3	1.32	17.8	104	4.96
80	2.3	1.0	2.3	450	17.0	12.1	0.71	1.28	21.4	13.3	450	22.1	1.47	17.0	116	4.41
	2.3	1.0	2.3	600	17.7	13.7	0.77	1.33	22.3	13.3	600	22.7	1.32	18.2	105	5.03
	3.4	2.0	4.5	450	17.5	12.3	0.70	1.20	21.6	14.7	450	23.3	1.49	18.0	118	4.59
	3.4	2.0	4.5	600	18.3	13.9	0.76	1.25	22.5	14.7	600	23.9	1.34	19.3	107	5.23
	4.5	3.6	8.3	450	17.9	12.5	0.69	1.15	21.9	15.5	450	23.9	1.50	18.6	119	4.68
	4.5	3.6	8.3	600	18.7	14.1	0.76	1.20	22.8	15.5	600	24.5	1.35	19.9	108	5.34
85	2.3	1.0	2.2	450	16.4	11.8	0.72	1.35	21.0	12.2	450	23.1	1.49	17.9	118	4.56
	2.3	1.0	2.2	600	17.1	13.3	0.78	1.40	21.9	12.2	600	23.7	1.33	19.1	107	5.20
	3.4	1.9	4.4	450	16.9	12.0	0.71	1.26	21.2	13.5	450	24.3	1.50	19.0	120	4.74
	3.4	1.9	4.4	600	17.6	13.5	0.77	1.31	22.1	13.5	600	24.9	1.35	20.3	108	5.41
	4.5	3.5	8.1	450	17.3	12.2	0.70	1.22	21.5	14.3	450	25.0	1.51	19.6	121	4.84
	4.5	3.5	8.1	600	18.0	13.8	0.76	1.27	22.4	14.3	600	25.6	1.36	20.9	110	5.51
90	2.3	0.9	2.1	450	15.8	11.5	0.73	1.42	20.6	11.1	450	24.1	1.50	18.8	120	4.71
	2.3	0.9	2.1	600	16.4	13.0	0.79	1.48	21.5	11.1	600	24.7	1.35	20.1	108	5.37
	3.4	1.8	4.2	450	16.3	11.7	0.71	1.33	20.8	12.3	450	25.4	1.52	20.0	122	4.89
	3.4	1.8	4.2	600	17.0	13.2	0.78	1.38	21.7	12.3	600	26.0	1.37	21.3	110	5.58
	4.5	3.4	7.9	450	16.7	11.9	0.71	1.28	21.1	13.0	450	26.1	1.53	20.6	124	4.99
	4.5	3.4	7.9	600	17.4	13.4	0.77	1.34	22.0	13.0	600	26.7	1.38	22.0	111	5.69
100	2.3	0.9	2.0	450	14.4	10.8	0.75	1.57	19.8	9.2	Operation not recommended					
	2.3	0.9	2.0	600	15.0	12.2	0.82	1.63	20.6	9.2						
	3.4	1.7	4.0	450	15.0	11.0	0.74	1.48	20.0	10.1						
	3.4	1.7	4.0	600	15.6	12.5	0.80	1.54	20.8	10.1						
	4.5	3.2	7.4	450	15.4	11.2	0.73	1.43	20.3	10.8						
	4.5	3.2	7.4	600	16.0	12.7	0.79	1.49	21.1	10.8						
110	2.3	0.8	1.8	450	12.9	10.1	0.78	1.74	18.8	7.4						
	2.3	0.8	1.8	600	13.4	11.4	0.85	1.81	19.6	7.4						
	3.4	1.6	3.8	450	13.5	10.3	0.76	1.64	19.1	8.2						
	3.4	1.6	3.8	600	14.0	11.6	0.83	1.71	19.9	8.2						
	4.5	3.1	7.1	450	13.9	10.5	0.75	1.59	19.4	8.8						
	4.5	3.1	7.1	600	14.5	11.9	0.82	1.65	20.2	8.8						
120	2.3	0.7	1.7	450	11.2	9.2	0.82	1.92	17.8	5.8						
	2.3	0.7	1.7	600	11.6	10.4	0.89	2.00	18.5	5.8						
	3.4	1.6	3.6	450	11.8	9.5	0.80	1.82	18.1	6.5						
	3.4	1.6	3.6	600	12.3	10.7	0.87	1.89	18.8	6.5						
	4.5	2.9	6.8	450	12.3	9.7	0.79	1.77	18.4	7.0						
	4.5	2.9	6.8	600	12.8	11.0	0.86	1.84	19.1	7.0						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
AHRI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.
Table does not reflect fan or pump power corrections for AHRI/ISO conditions.
All performance is based upon the lower voltage of dual voltage rated units.
Performance stated is at the rated power supply; performance may vary as the power supply varies from the rated.
Operation below 40°F EWT is based upon a 15% methanol antifreeze solution.
Operation below 60°F EWT requires optional insulated water/refrigerant circuit.
See performance correction tables for operating conditions other than those listed above.
See Performance Data Selection Notes for operation in the shaded areas.

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Performance Data – TR H/V 024

800 CFM Nominal (Rated) Airflow

Performance capacities shown in thousands of Btuh

EWT °F	GPM	WPD		Cooling - EAT 80/67°F							Heating - EAT 70°F					
		PSI	FT	Airflow CFM	TC	SC	Sens/Tot Ratio	kW	HR	EER	Airflow CFM	HC	kW	HE	LAT	COP
20	6.0	8.5	19.6	Operation not recommended							640	15.5	1.91	9.5	92	2.39
	6.0	8.5	19.6								850	15.9	1.71	10.1	87	2.72
30	3.0	2.2	5.2	640	27.7	17.4	0.63	1.12	31.5	24.8	640	17.2	1.93	11.0	95	2.61
	3.0	2.2	5.2	850	28.9	19.7	0.68	1.16	32.8	24.8	850	17.6	1.74	11.8	89	2.98
	4.5	4.0	9.3	640	28.2	17.5	0.62	1.05	31.8	26.9	640	18.0	1.95	11.7	96	2.70
	4.5	4.0	9.3	850	29.4	19.8	0.67	1.09	33.1	26.9	850	18.4	1.75	12.5	90	3.08
	6.0	7.2	16.7	640	28.5	17.5	0.62	1.02	31.9	28.0	640	18.4	1.95	12.1	97	2.76
	6.0	7.2	16.7	850	29.6	19.8	0.67	1.06	33.2	28.0	850	18.8	1.76	12.9	91	3.14
40	3.0	1.9	4.4	640	26.9	17.1	0.64	1.23	31.1	21.9	640	19.9	1.98	13.4	99	2.94
	3.0	1.9	4.4	850	28.0	19.4	0.69	1.28	32.4	21.9	850	20.4	1.78	14.4	92	3.36
	4.5	3.6	8.2	640	27.5	17.3	0.63	1.15	31.4	24.0	640	20.8	2.00	14.3	100	3.06
	4.5	3.6	8.2	850	28.7	19.6	0.68	1.19	32.7	24.0	850	21.3	1.79	15.3	93	3.49
	6.0	6.4	14.9	640	27.8	17.4	0.63	1.11	31.5	25.1	640	21.3	2.01	14.7	101	3.12
	6.0	6.4	14.9	850	28.9	19.7	0.68	1.16	32.8	25.1	850	21.9	1.80	15.7	94	3.55
50	3.0	1.7	3.9	640	26.2	16.9	0.65	1.36	30.8	19.3	640	22.6	2.03	15.9	103	3.27
	3.0	1.7	3.9	850	27.3	19.1	0.70	1.42	32.1	19.3	850	23.2	1.82	17.0	95	3.72
	4.5	3.2	7.4	640	26.7	17.0	0.64	1.26	31.0	21.1	640	23.7	2.05	16.9	104	3.39
	4.5	3.2	7.4	850	27.8	19.3	0.69	1.32	32.2	21.1	850	24.3	1.84	18.0	96	3.87
	6.0	5.9	13.6	640	27.0	17.1	0.64	1.22	31.1	22.1	640	24.3	2.06	17.4	105	3.46
	6.0	5.9	13.6	850	28.1	19.4	0.69	1.27	32.4	22.1	850	24.9	1.85	18.6	97	3.94
60	3.0	1.5	3.5	640	25.3	16.6	0.66	1.52	30.4	16.7	640	25.3	2.08	18.3	107	3.57
	3.0	1.5	3.5	850	26.3	18.8	0.71	1.58	31.7	16.7	850	25.9	1.87	19.6	98	4.07
	4.5	3.0	6.9	640	25.7	16.7	0.65	1.40	30.5	18.3	640	26.6	2.10	19.4	108	3.70
	4.5	3.0	6.9	850	26.8	18.9	0.70	1.46	31.7	18.3	850	27.2	1.89	20.7	100	4.22
	6.0	5.5	12.6	640	26.1	16.8	0.64	1.35	30.6	19.3	640	27.2	2.12	20.0	109	3.77
	6.0	5.5	12.6	850	27.1	19.0	0.70	1.41	31.9	19.3	850	27.9	1.90	21.4	100	4.30
70	3.0	1.4	3.2	640	24.1	16.2	0.67	1.70	29.9	14.2	640	27.9	2.13	20.7	110	3.84
	3.0	1.4	3.2	850	25.1	18.3	0.73	1.77	31.1	14.2	850	28.6	1.91	22.1	101	4.38
	4.5	2.8	6.4	640	24.6	16.3	0.66	1.57	30.0	15.7	640	29.2	2.16	21.8	112	3.97
	4.5	2.8	6.4	850	25.6	18.4	0.72	1.63	31.2	15.7	850	29.9	1.94	23.3	103	4.53
	6.0	5.2	11.9	640	25.0	16.4	0.66	1.51	30.1	16.6	640	29.9	2.17	22.5	113	4.04
	6.0	5.2	11.9	850	26.0	18.6	0.71	1.57	31.4	16.6	850	30.6	1.95	24.0	103	4.60
80	3.0	1.3	3.0	640	22.9	15.7	0.69	1.91	29.4	12.0	640	30.4	2.18	22.9	114	4.08
	3.0	1.3	3.0	850	23.8	17.8	0.75	1.99	30.6	12.0	850	31.1	1.96	24.4	104	4.65
	4.5	2.6	6.1	640	23.4	15.8	0.67	1.76	29.4	13.3	640	31.7	2.21	24.0	116	4.20
	4.5	2.6	6.1	850	24.4	17.9	0.73	1.84	30.7	13.3	850	32.5	1.99	25.7	105	4.79
	6.0	4.9	11.3	640	23.8	16.0	0.67	1.70	29.6	14.1	640	32.4	2.23	24.6	117	4.26
	6.0	4.9	11.3	850	24.8	18.1	0.73	1.77	30.8	14.1	850	33.1	2.00	26.3	106	4.85
85	3.0	1.3	2.9	640	22.2	15.5	0.70	2.03	29.2	11.0	640	31.5	2.21	23.8	116	4.18
	3.0	1.3	2.9	850	23.1	17.5	0.76	2.12	30.4	11.0	850	32.3	1.98	25.5	105	4.77
	4.5	2.6	5.9	640	22.8	15.6	0.68	1.88	29.2	12.2	640	32.7	2.24	25.0	117	4.29
	4.5	2.6	5.9	850	23.7	17.6	0.74	1.95	30.4	12.2	850	33.5	2.01	26.7	107	4.89
	6.0	4.8	11.0	640	23.2	15.7	0.68	1.80	29.3	12.9	640	33.4	2.25	25.5	118	4.34
	6.0	4.8	11.0	850	24.1	17.8	0.74	1.88	30.5	12.9	850	34.2	2.02	27.2	107	4.95
90	3.0	1.2	2.8	640	21.6	15.3	0.71	2.16	28.9	10.0	640	32.6	2.23	24.8	117	4.28
	3.0	1.2	2.8	850	22.4	17.3	0.77	2.25	30.1	10.0	850	33.4	2.01	26.5	106	4.88
	4.5	2.5	5.8	640	22.2	15.4	0.69	1.99	29.0	11.1	640	33.8	2.26	25.9	119	4.38
	4.5	2.5	5.8	850	23.1	17.4	0.75	2.07	30.1	11.1	850	34.6	2.03	27.6	108	4.99
	6.0	4.7	10.7	640	22.5	15.4	0.69	1.91	29.0	11.8	640	34.4	2.28	26.4	120	4.42
	6.0	4.7	10.7	850	23.4	17.5	0.75	1.99	30.2	11.8	850	35.2	2.05	28.2	108	5.04
100	3.0	1.2	2.7	640	20.2	14.8	0.74	2.44	28.5	8.3	Operation not recommended					
	3.0	1.2	2.7	850	21.0	16.8	0.80	2.54	29.7	8.3						
	4.5	2.4	5.5	640	20.8	14.9	0.72	2.25	28.5	9.2						
	4.5	2.4	5.5	850	21.6	16.9	0.78	2.34	29.7	9.2						
	6.0	4.5	10.3	640	21.1	15.0	0.71	2.16	28.5	9.8						
	6.0	4.5	10.3	850	22.0	17.0	0.77	2.25	29.7	9.8						
110	3.0	1.1	2.5	640	18.8	14.4	0.77	2.77	28.3	6.8						
	3.0	1.1	2.5	850	19.5	16.3	0.84	2.88	29.4	6.8						
	4.5	2.3	5.3	640	19.3	14.4	0.75	2.55	28.1	7.6						
	4.5	2.3	5.3	850	20.1	16.3	0.81	2.66	29.2	7.6						
	6.0	4.3	9.9	640	19.7	14.5	0.74	2.45	28.1	8.0						
	6.0	4.3	9.9	850	20.5	16.4	0.80	2.55	29.3	8.0						
120	3.0	1.0	2.4	640	17.1	13.9	0.81	3.13	27.9	5.5						
	3.0	1.0	2.4	850	17.8	15.7	0.88	3.26	29.0	5.5						
	4.5	2.2	5.1	640	17.8	14.0	0.78	2.89	27.8	6.2						
	4.5	2.2	5.1	850	18.6	15.8	0.85	3.01	28.9	6.2						
	6.0	4.2	9.6	640	18.3	14.1	0.77	2.78	27.9	6.6						
	6.0	4.2	9.6	850	19.1	16.0	0.84	2.89	29.0	6.6						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
AHRI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.
Table does not reflect fan or pump power corrections for AHRI/ISO conditions.
All performance is based upon the lower voltage of dual voltage rated units.
Performance stated is at the rated power supply; performance may vary as the power supply varies from the rated.
Operation below 40°F EWT is based upon a 15% methanol antifreeze solution.
Operation below 60°F EWT requires optional insulated water/refrigerant circuit.
See performance correction tables for operating conditions other than those listed above.
See Performance Data Selection Notes for operation in the shaded areas.

ClimateMaster works continually to improve its products. As a result, the design and specifications of each product at the time of order may be changed without notice and may not be as described herein. Please contact ClimateMaster's Customer Service Department at 1-405-745-6000 for specific information on the current design and specifications. Statements and other information contained herein are not express warranties and do not form the basis of any bargain between the parties, but are merely ClimateMaster's opinion or commendation of its products. The latest version of this document is available at **climatemaster.com.**

Performance Data – TR H/V 030

1,000 CFM Nominal (Rated) Airflow

Performance capacities shown in thousands of Btuh

EWT °F	GPM	WPD		Cooling - EAT 80/67°F							Heating - EAT 70°F					
		PSI	FT	Airflow CFM	TC	SC	Sens/Tot Ratio	kW	HR	EER	Airflow CFM	HC	kW	HE	LAT	COP
20	7.5	5.0	11.6	Operation not recommended							750	20.0	2.31	12.6	95	2.53
	7.5	5.0	11.6								1000	20.4	2.08	13.4	89	2.89
30	3.8	1.3	2.9	750	33.3	20.3	0.61	1.38	38.0	24.0	750	21.6	2.37	14.0	97	2.67
	3.8	1.3	2.9	1000	34.7	22.9	0.66	1.44	39.5	24.0	1000	22.1	2.13	14.9	90	3.04
	5.6	2.3	5.4	750	33.5	20.2	0.60	1.31	37.9	25.7	750	22.5	2.40	14.7	98	2.75
	5.6	2.3	5.4	1000	34.9	22.8	0.65	1.36	39.5	25.7	1000	23.0	2.15	15.7	91	3.13
	7.5	4.2	9.7	750	33.6	20.0	0.60	1.27	37.9	26.5	750	22.9	2.41	15.1	98	2.79
	7.5	4.2	9.7	1000	35.0	22.7	0.65	1.32	39.4	26.5	1000	23.5	2.16	16.2	92	3.18
40	3.8	1.0	2.4	750	32.6	20.2	0.62	1.51	37.7	21.6	750	24.7	2.45	16.7	100	2.95
	3.8	1.0	2.4	1000	34.0	22.8	0.67	1.57	39.3	21.6	1000	25.3	2.20	17.8	93	3.36
	5.6	2.0	4.7	750	33.1	20.3	0.61	1.42	37.9	23.3	750	25.7	2.48	17.6	102	3.04
	5.6	2.0	4.7	1000	34.5	22.9	0.67	1.48	39.5	23.3	1000	26.4	2.23	18.8	94	3.47
	7.5	3.7	8.6	750	33.7	20.5	0.61	1.38	38.3	24.4	750	26.3	2.49	18.1	102	3.10
	7.5	3.7	8.6	1000	35.1	23.2	0.66	1.44	39.9	24.4	1000	26.9	2.24	19.4	95	3.53
50	3.8	0.9	2.1	750	31.6	19.9	0.63	1.65	37.2	19.2	750	27.8	2.52	19.5	104	3.24
	3.8	0.9	2.1	1000	32.9	22.5	0.68	1.72	38.8	19.2	1000	28.5	2.26	20.8	96	3.69
	5.6	1.8	4.2	750	32.3	20.1	0.62	1.55	37.6	20.9	750	29.1	2.55	20.6	106	3.35
	5.6	1.8	4.2	1000	33.7	22.8	0.68	1.61	39.1	20.9	1000	29.8	2.29	22.0	98	3.82
	7.5	3.4	7.8	750	32.6	20.2	0.62	1.50	37.7	21.7	750	29.8	2.56	21.3	107	3.41
	7.5	3.4	7.8	1000	34.0	22.9	0.67	1.57	39.3	21.7	1000	30.5	2.30	22.7	98	3.89
60	3.8	0.8	1.8	750	30.4	19.4	0.64	1.81	36.6	16.8	750	31.0	2.58	22.4	108	3.52
	3.8	0.8	1.8	1000	31.7	21.9	0.69	1.89	38.1	16.8	1000	31.8	2.32	23.9	99	4.02
	5.6	1.7	3.8	750	31.1	19.6	0.63	1.70	36.9	18.3	750	32.5	2.61	23.7	110	3.65
	5.6	1.7	3.8	1000	32.4	22.2	0.69	1.77	38.4	18.3	1000	33.3	2.34	25.3	101	4.16
	7.5	3.1	7.2	750	31.4	19.7	0.63	1.65	37.0	19.0	750	33.3	2.63	24.4	111	3.71
	7.5	3.1	7.2	1000	32.7	22.3	0.68	1.71	38.5	19.1	1000	34.1	2.36	26.0	102	4.24
70	3.8	0.7	1.6	750	29.0	18.8	0.65	2.00	35.8	14.5	750	34.2	2.64	25.2	112	3.79
	3.8	0.7	1.6	1000	30.2	21.2	0.70	2.08	37.3	14.5	1000	35.1	2.37	26.9	102	4.33
	5.6	1.5	3.6	750	30.0	19.2	0.64	1.87	36.3	16.0	750	35.8	2.68	26.7	114	3.92
	5.6	1.5	3.6	1000	31.2	21.7	0.70	1.95	37.8	16.0	1000	36.7	2.40	28.5	104	4.47
	7.5	2.9	6.7	750	30.4	19.4	0.64	1.81	36.6	16.8	750	36.7	2.70	27.4	115	3.99
	7.5	2.9	6.7	1000	31.7	21.9	0.69	1.89	38.1	16.8	1000	37.6	2.42	29.3	105	4.55
80	3.8	0.7	1.5	750	27.7	18.3	0.66	2.21	35.3	12.5	750	37.3	2.71	28.0	116	4.04
	3.8	0.7	1.5	1000	28.8	20.7	0.72	2.30	36.7	12.5	1000	38.2	2.43	29.9	105	4.60
	5.6	1.4	3.3	750	28.5	18.5	0.65	2.07	35.5	13.7	750	39.0	2.75	29.5	118	4.15
	5.6	1.4	3.3	1000	29.6	21.0	0.71	2.16	37.0	13.7	1000	40.0	2.47	31.5	107	4.74
	7.5	2.7	6.3	750	29.0	18.7	0.65	2.00	35.8	14.5	750	40.2	2.78	30.6	120	4.24
	7.5	2.7	6.3	1000	30.2	21.2	0.70	2.08	37.3	14.5	1000	41.2	2.50	32.6	108	4.84
85	3.8	0.6	1.4	750	26.7	17.8	0.67	2.34	34.7	11.5	750	38.8	2.75	29.3	118	4.14
	3.8	0.6	1.4	1000	27.8	20.1	0.72	2.43	36.1	11.5	1000	39.8	2.5	31.3	107	4.72
	5.6	1.4	3.2	750	27.6	18.2	0.66	2.18	35.1	12.7	750	40.5	2.8	30.8	120	4.24
	5.6	1.4	3.2	1000	28.8	20.6	0.71	2.27	36.5	12.7	1000	41.5	2.5	32.9	108	4.84
	7.5	2.7	6.2	750	28.2	18.4	0.65	2.11	35.4	13.4	750	41.6	2.8	31.7	121	4.30
	7.5	2.7	6.2	1000	29.3	20.8	0.71	2.20	36.8	13.4	1000	42.6	2.5	33.9	109	4.91
90	3.8	0.6	1.4	750	25.7	17.3	0.67	2.46	34.1	10.5	750	40.3	2.79	30.6	120	4.23
	3.8	0.6	1.4	1000	26.8	19.6	0.73	2.56	35.5	10.5	1000	41.3	2.51	32.7	108	4.83
	5.6	1.4	3.1	750	26.8	17.8	0.66	2.30	34.7	11.7	750	42.0	2.85	32.1	122	4.33
	5.6	1.4	3.1	1000	27.9	20.1	0.72	2.39	36.1	11.7	1000	43.0	2.56	34.3	110	4.93
	7.5	2.6	6.0	750	27.3	18.0	0.66	2.22	34.9	12.3	750	42.9	2.88	32.9	123	4.36
	7.5	2.6	6.0	1000	28.5	20.4	0.72	2.31	36.4	12.3	1000	44.0	2.59	35.1	111	4.98
100	3.8	0.6	1.3	750	24.0	16.6	0.69	2.74	33.3	8.7	Operation not recommended					
	3.8	0.6	1.3	1000	24.9	18.8	0.75	2.85	34.7	8.7						
	5.6	1.3	3.0	750	25.1	17.0	0.68	2.56	33.8	9.8						
	5.6	1.3	3.0	1000	26.1	19.3	0.74	2.67	35.2	9.8						
	7.5	2.5	5.7	750	25.6	17.3	0.67	2.48	34.1	10.3						
	7.5	2.5	5.7	1000	26.7	19.6	0.73	2.58	35.5	10.3						
110	3.8	0.5	1.2	750	22.5	16.1	0.72	3.07	33.0	7.4						
	3.8	0.5	1.2	1000	23.5	18.2	0.78	3.19	34.4	7.4						
	5.6	1.2	2.8	750	23.2	16.3	0.70	2.86	33.1	8.1						
	5.6	1.2	2.8	1000	24.2	18.4	0.76	2.98	34.4	8.1						
	7.5	2.4	5.5	750	23.8	16.5	0.69	2.77	33.3	8.6						
	7.5	2.4	5.5	1000	24.8	18.7	0.75	2.88	34.6	8.6						
120	3.8	0.5	1.1	750	20.4	15.2	0.74	3.44	32.2	5.9						
	3.8	0.5	1.1	1000	21.2	17.2	0.81	3.58	33.5	5.9						
	5.6	1.2	2.7	750	21.4	15.6	0.73	3.21	32.4	6.7						
	5.6	1.2	2.7	1000	22.3	17.6	0.79	3.34	33.8	6.7						
	7.5	2.3	5.3	750	22.0	15.8	0.72	3.10	32.6	7.1						
	7.5	2.3	5.3	1000	22.9	17.8	0.78	3.23	33.9	7.1						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
AHRI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.
Table does not reflect fan or pump power corrections for AHRI/ISO conditions.
All performance is based upon the lower voltage of dual voltage rated units.
Performance stated is at the rated power supply; performance may vary as the power supply varies from the rated.
Operation below 40°F EWT is based upon a 15% methanol antifreeze solution.
Operation below 60°F EWT requires optional insulated water/refrigerant circuit.
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See Performance Data Selection Notes for operation in the shaded areas.

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Performance Data – TR H/V 036

1,200 CFM Nominal (Rated) Airflow

Performance capacities shown in thousands of Btuh

EWT °F	GPM	WPD		Cooling - EAT 80/67°F							Heating - EAT 70°F					
		PSI	FT	Airflow CFM	TC	SC	Sens/Tot Ratio	kW	HR	EER	Airflow CFM	HC	kW	HE	LAT	COP
20	9.0	6.4	14.8	Operation not recommended							860	22.6	2.67	14.1	94	2.49
	9.0	6.4	14.8								1150	23.2	2.39	15.1	89	2.84
30	4.5	1.8	4.3	860	39.9	24.2	0.61	1.67	45.6	23.8	860	25.6	2.80	16.6	98	2.68
	4.5	1.8	4.3	1150	41.5	27.4	0.66	1.74	47.4	23.8	1150	26.2	2.51	17.7	91	3.06
	6.8	3.1	7.1	860	40.1	24.3	0.61	1.62	45.5	24.7	860	26.8	2.85	17.6	99	2.76
	6.8	3.1	7.1	1150	41.7	27.5	0.66	1.69	47.4	24.7	1150	27.5	2.56	18.8	92	3.15
	9.0	5.4	12.5	860	40.0	24.3	0.61	1.60	45.5	25.0	860	27.5	2.88	18.2	100	2.80
	9.0	5.4	12.5	1150	41.7	27.5	0.66	1.67	47.3	25.0	1150	28.2	2.59	19.4	93	3.19
40	4.5	1.6	3.6	860	39.2	24.0	0.61	1.80	45.3	21.8	860	30.1	2.98	20.3	102	2.95
	4.5	1.6	3.6	1150	40.8	27.2	0.67	1.87	47.1	21.8	1150	30.8	2.68	21.7	95	3.37
	6.8	2.7	6.2	860	39.7	24.2	0.61	1.71	45.5	23.3	860	31.6	3.05	21.6	104	3.04
	6.8	2.7	6.2	1150	41.4	27.4	0.66	1.78	47.4	23.3	1150	32.4	2.74	23.1	96	3.47
	9.0	4.8	11.1	860	39.9	24.3	0.61	1.67	45.6	23.9	860	32.4	3.08	22.3	105	3.09
	9.0	4.8	11.1	1150	41.6	27.4	0.66	1.74	47.4	23.9	1150	33.2	2.77	23.8	97	3.52
50	4.5	1.4	3.2	860	38.0	23.6	0.62	1.98	44.7	19.2	860	34.5	3.16	24.1	107	3.20
	4.5	1.4	3.2	1150	39.5	26.7	0.68	2.06	46.5	19.2	1150	35.4	2.84	25.7	98	3.65
	6.8	2.4	5.6	860	38.8	23.9	0.62	1.85	45.1	21.0	860	36.3	3.23	25.6	109	3.30
	6.8	2.4	5.6	1150	40.4	27.0	0.67	1.92	47.0	21.0	1150	37.2	2.90	27.3	100	3.76
	9.0	4.4	10.1	860	39.2	24.0	0.61	1.79	45.3	21.9	860	37.3	3.27	26.4	110	3.35
	9.0	4.4	10.1	1150	40.8	27.2	0.67	1.87	47.2	21.9	1150	38.2	2.93	28.2	101	3.82
60	4.5	1.3	2.9	860	36.1	22.9	0.63	2.20	43.6	16.4	860	38.9	3.32	27.8	112	3.43
	4.5	1.3	2.9	1150	37.6	25.9	0.69	2.29	45.4	16.4	1150	39.8	2.99	29.7	102	3.91
	6.8	2.3	5.2	860	37.5	23.5	0.63	2.04	44.4	18.4	860	40.9	3.40	29.5	114	3.53
	6.8	2.3	5.2	1150	39.1	26.5	0.68	2.13	46.3	18.4	1150	41.9	3.05	31.5	104	4.02
	9.0	4.0	9.3	860	38.0	23.6	0.62	1.97	44.7	19.3	860	42.0	3.44	30.4	115	3.58
	9.0	4.0	9.3	1150	39.6	26.7	0.68	2.05	46.5	19.3	1150	43.0	3.09	32.5	105	4.08
70	4.5	1.2	2.7	860	34.6	22.5	0.65	2.46	42.9	14.0	860	43.1	3.47	31.4	116	3.64
	4.5	1.2	2.7	1150	36.0	25.5	0.71	2.56	44.7	14.0	1150	44.1	3.12	33.5	106	4.15
	6.8	2.1	4.9	860	35.8	22.9	0.64	2.28	43.6	15.7	860	45.2	3.55	33.2	119	3.74
	6.8	2.1	4.9	1150	37.3	25.9	0.70	2.38	45.4	15.7	1150	46.3	3.19	35.4	107	4.26
	9.0	3.8	8.7	860	36.4	23.1	0.63	2.20	43.9	16.6	860	46.4	3.59	34.2	120	3.79
	9.0	3.8	8.7	1150	37.9	26.1	0.69	2.29	45.7	16.6	1150	47.5	3.22	36.5	108	4.32
80	4.5	1.1	2.5	860	32.5	21.8	0.67	2.76	41.9	11.8	860	47.0	3.61	34.8	121	3.82
	4.5	1.1	2.5	1150	33.8	24.7	0.73	2.88	43.7	11.8	1150	48.2	3.24	37.1	109	4.36
	6.8	2.0	4.6	860	33.9	22.3	0.66	2.56	42.6	13.2	860	49.2	3.68	36.6	123	3.92
	6.8	2.0	4.6	1150	35.3	25.2	0.72	2.67	44.4	13.2	1150	50.4	3.30	39.1	111	4.47
	9.0	3.6	8.3	860	34.5	22.5	0.65	2.47	42.9	14.0	860	50.3	3.71	37.6	124	3.97
	9.0	3.6	8.3	1150	35.9	25.5	0.71	2.57	44.7	14.0	1150	51.5	3.34	40.1	111	4.53
85	4.5	1.0	2.4	860	31.5	21.5	0.68	2.90	41.5	10.8	860	48.8	3.67	36.3	123	3.90
	4.5	1.0	2.4	1150	32.8	24.4	0.74	3.05	43.3	10.8	1150	50.0	3.29	38.8	110	4.45
	6.8	1.9	4.4	860	32.8	21.9	0.67	2.72	42.1	12.1	860	50.9	3.73	38.1	125	4.00
	6.8	1.9	4.4	1150	34.1	24.8	0.73	2.84	43.8	12.1	1150	52.2	3.35	40.7	112	4.56
	9.0	3.5	8.1	860	33.4	22.1	0.66	2.62	42.3	12.8	860	52.0	3.76	39.0	126	4.05
	9.0	3.5	8.1	1150	34.7	25.0	0.72	2.73	44.1	12.8	1150	53.2	3.38	41.7	113	4.62
90	4.5	1.0	2.3	860	30.5	21.2	0.70	3.10	41.1	9.8	860	50.6	3.72	37.9	125	3.99
	4.5	1.0	2.3	1150	31.8	24.0	0.76	3.23	42.8	9.8	1150	51.9	3.34	40.4	112	4.54
	6.8	1.9	4.3	860	31.7	21.6	0.68	2.88	41.6	11.0	860	52.7	3.79	39.6	127	4.08
	6.8	1.9	4.3	1150	33.0	24.4	0.74	3.00	43.3	11.0	1150	54.0	3.40	42.3	113	4.65
	9.0	3.4	7.9	860	32.2	21.7	0.67	2.78	41.7	11.6	860	53.7	3.82	40.5	128	4.12
	9.0	3.4	7.9	1150	33.5	24.5	0.73	2.89	43.4	11.6	1150	55.0	3.43	43.2	114	4.70
100	4.5	0.9	2.2	860	28.3	20.5	0.72	3.47	40.2	8.1	Operation not recommended					
	4.5	0.9	2.2	1150	29.5	23.1	0.79	3.62	41.9	8.2						
	6.8	1.8	4.1	860	29.5	20.8	0.71	3.24	40.6	9.1						
	6.8	1.8	4.1	1150	30.7	23.5	0.77	3.37	42.2	9.1						
	9.0	3.3	7.5	860	30.1	21.0	0.70	3.13	40.8	9.6						
	9.0	3.3	7.5	1150	31.3	23.7	0.76	3.25	42.5	9.6						
110	4.5	0.9	2.1	860	26.2	19.8	0.75	3.88	39.5	6.8						
	4.5	0.9	2.1	1150	27.3	22.4	0.82	4.04	41.1	6.8						
	6.8	1.7	4.0	860	27.2	20.0	0.73	3.63	39.7	7.5						
	6.8	1.7	4.0	1150	28.4	22.6	0.80	3.78	41.3	7.5						
	9.0	3.1	7.2	860	27.6	20.0	0.72	3.51	39.6	7.9						
	9.0	3.1	7.2	1150	28.8	22.7	0.79	3.65	41.3	7.9						
120	4.5	0.9	2.0	860	24.1	19.0	0.79	4.31	38.9	5.6						
	4.5	0.9	2.0	1150	25.1	21.4	0.86	4.49	40.4	5.6						
	6.8	1.6	3.8	860	25.1	19.2	0.77	4.05	39.0	6.2						
	6.8	1.6	3.8	1150	26.1	21.8	0.83	4.21	40.6	6.2						
	9.0	3.0	7.0	860	25.4	19.2	0.76	3.92	38.9	6.5						
	9.0	3.0	7.0	1150	26.5	21.8	0.82	4.08	40.5	6.5						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
AHRI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.
Table does not reflect fan or pump power corrections for AHRI/ISO conditions.
All performance is based upon the lower voltage of dual voltage rated units.
Performance stated is at the rated power supply; performance may vary as the power supply varies from the rated.
Operation below 40°F EWT is based upon a 15% methanol antifreeze solution.
Operation below 60°F EWT requires optional insulated water/refrigerant circuit.
See performance correction tables for operating conditions other than those listed above.
See Performance Data Selection Notes for operation in the shaded areas.

ClimateMaster works continually to improve its products. As a result, the design and specifications of each product at the time of order may be changed without notice and may not be as described herein. Please contact ClimateMaster's Customer Service Department at 1-405-745-6000 for specific information on the current design and specifications. Statements and other information contained herein are not express warranties and do not form the basis of any bargain between the parties, but are merely ClimateMaster's opinion or commendation of its products. The latest version of this document is available at **climatemaster.com.**

Performance Data – TR H/V 042

1,350 CFM Nominal (Rated) Airflow

Performance capacities shown in thousands of Btuh

EWT °F	GPM	WPD		Cooling - EAT 80/67°F							Heating - EAT 70°F					
		PSI	FT	Airflow CFM	TC	SC	Sens/Tot Ratio	kW	HR	EER	Airflow CFM	HC	kW	HE	LAT	COP
20	10.5	9.2	21.3	Operation not recommended							1050	28.8	3.37	18.1	95	2.51
	10.5	9.2	21.3								1400	29.5	3.03	19.3	90	2.86
30	5.3	2.3	5.3	1050	47.4	30.6	0.65	1.87	53.7	25.4	1050	31.6	3.45	20.5	98	2.68
	5.3	2.3	5.3	1400	49.3	34.7	0.70	1.95	55.9	25.4	1400	32.4	3.10	21.9	91	3.06
	7.9	4.3	10.0	1050	48.4	31.1	0.64	1.76	54.4	27.5	1050	32.9	3.49	21.6	99	2.76
	7.9	4.3	10.0	1400	50.4	35.2	0.70	1.83	56.6	27.5	1400	33.7	3.14	23.1	92	3.15
	10.5	7.9	18.2	1050	48.9	31.3	0.64	1.71	54.7	28.6	1050	33.6	3.52	22.3	100	2.80
	10.5	7.9	18.2	1400	50.9	35.5	0.70	1.78	57.0	28.6	1400	34.5	3.16	23.8	93	3.20
40	5.3	2.0	4.6	1050	45.9	29.9	0.65	2.05	52.8	22.4	1050	36.1	3.59	24.4	102	2.95
	5.3	2.0	4.6	1400	47.8	33.9	0.71	2.13	55.0	22.4	1400	37.0	3.23	26.1	94	3.36
	7.9	3.9	8.9	1050	47.0	30.4	0.65	1.92	53.4	24.5	1050	37.8	3.64	25.8	103	3.04
	7.9	3.9	8.9	1400	48.9	34.4	0.70	2.00	55.6	24.5	1400	38.7	3.27	27.6	96	3.46
	10.5	7.1	16.4	1050	47.5	30.7	0.65	1.86	53.8	25.5	1050	38.7	3.67	26.6	104	3.09
	10.5	7.1	16.4	1400	49.4	34.7	0.70	1.94	56.0	25.5	1400	39.6	3.30	28.4	96	3.52
50	5.3	1.8	4.1	1050	44.4	29.2	0.66	2.26	52.0	19.6	1050	40.8	3.74	28.5	106	3.20
	5.3	1.8	4.1	1400	46.2	33.1	0.72	2.35	54.2	19.6	1400	41.8	3.36	30.4	98	3.65
	7.9	3.5	8.1	1050	45.4	29.7	0.65	2.11	52.6	21.5	1050	42.8	3.80	30.2	108	3.30
	7.9	3.5	8.1	1400	47.3	33.6	0.71	2.20	54.8	21.5	1400	43.8	3.41	32.2	99	3.76
	10.5	6.5	15.0	1050	46.0	30.0	0.65	2.04	52.9	22.5	1050	43.9	3.83	31.1	109	3.35
	10.5	6.5	15.0	1400	47.9	33.9	0.71	2.12	55.1	22.5	1400	44.9	3.44	33.2	100	3.82
60	5.3	1.6	3.7	1050	43.1	28.8	0.67	2.51	51.7	17.2	1050	45.6	3.89	32.6	110	3.44
	5.3	1.6	3.7	1400	44.9	32.6	0.73	2.61	53.8	17.2	1400	46.7	3.49	34.8	101	3.92
	7.9	3.3	7.5	1050	43.9	29.0	0.66	2.34	51.8	18.8	1050	47.8	3.96	34.5	112	3.54
	7.9	3.3	7.5	1400	45.7	32.8	0.72	2.43	53.9	18.8	1400	49.0	3.56	36.9	102	4.04
	10.5	6.1	14.0	1050	44.4	29.2	0.66	2.25	52.1	19.7	1050	49.0	4.00	35.6	113	3.60
	10.5	6.1	14.0	1400	46.2	33.1	0.72	2.35	54.2	19.7	1400	50.2	3.59	38.0	103	4.10
70	5.3	1.5	3.4	1050	41.3	28.1	0.68	2.80	50.9	14.8	1050	50.3	4.04	36.7	114	3.65
	5.3	1.5	3.4	1400	43.0	31.8	0.74	2.91	52.9	14.8	1400	51.5	3.63	39.2	104	4.16
	7.9	3.1	7.1	1050	42.2	28.3	0.67	2.60	51.0	16.2	1050	52.8	4.11	38.8	117	3.76
	7.9	3.1	7.1	1400	43.9	32.0	0.73	2.71	53.1	16.2	1400	54.1	3.70	41.5	106	4.29
	10.5	5.7	13.2	1050	42.8	28.5	0.67	2.51	51.3	17.1	1050	54.1	4.16	40.0	118	3.82
	10.5	5.7	13.2	1400	44.5	32.3	0.73	2.61	53.4	17.1	1400	55.4	3.73	42.7	107	4.35
80	5.3	1.4	3.2	1050	39.5	27.4	0.70	3.13	50.1	12.6	1050	54.9	4.18	40.7	118	3.85
	5.3	1.4	3.2	1400	41.1	31.0	0.76	3.26	52.2	12.6	1400	56.3	3.76	43.4	107	4.39
	7.9	2.9	6.7	1050	40.4	27.6	0.68	2.91	50.3	13.9	1050	57.6	4.27	43.0	121	3.96
	7.9	2.9	6.7	1400	42.1	31.3	0.74	3.03	52.4	13.9	1400	59.0	3.83	45.9	109	4.51
	10.5	5.4	12.6	1050	41.0	27.9	0.68	2.80	50.6	14.6	1050	59.0	4.31	44.2	122	4.01
	10.5	5.4	12.6	1400	42.7	31.5	0.74	2.92	52.6	14.6	1400	60.4	3.87	47.2	110	4.58
85	5.3	1.3	3.1	1050	38.4	27.1	0.71	3.32	49.8	11.6	1050	57.2	4.25	42.6	120	3.94
	5.3	1.3	3.1	1400	40.0	30.7	0.77	3.46	51.8	11.6	1400	58.6	3.82	45.5	109	4.49
	7.9	2.8	6.5	1050	39.4	27.3	0.69	3.08	50.0	12.8	1050	59.9	4.34	44.9	123	4.05
	7.9	2.8	6.5	1400	41.1	30.9	0.75	3.21	52.0	12.9	1400	61.3	3.89	48.0	111	4.61
	10.5	5.3	12.3	1050	40.1	27.5	0.69	2.97	50.2	13.5	1050	61.3	4.38	46.2	124	4.10
	10.5	5.3	12.3	1400	41.7	31.2	0.75	3.09	52.3	13.6	1400	62.7	3.93	49.3	111	4.68
90	5.3	1.3	3.0	1050	37.4	26.8	0.72	3.51	49.4	10.7	1050	59.4	4.32	44.6	122	4.03
	5.3	1.3	3.0	1400	39.0	30.3	0.78	3.65	51.5	10.7	1400	60.8	3.88	47.6	110	4.59
	7.9	2.8	6.4	1050	38.5	27.0	0.70	3.26	49.6	11.8	1050	62.1	4.40	46.9	125	4.13
	7.9	2.8	6.4	1400	40.1	30.6	0.76	3.39	51.6	11.8	1400	63.6	3.96	50.1	112	4.71
	10.5	5.2	12.0	1050	39.1	27.2	0.70	3.14	49.8	12.5	1050	63.5	4.45	48.1	126	4.19
	10.5	5.2	12.0	1400	40.7	30.8	0.76	3.27	51.9	12.5	1400	65.1	3.99	51.4	113	4.77
100	5.3	1.2	2.8	1050	35.2	26.2	0.74	3.94	48.7	8.9	Operation not recommended					
	5.3	1.2	2.8	1400	36.7	29.6	0.81	4.10	50.7	8.9						
	7.9	2.7	6.1	1050	36.4	26.4	0.73	3.66	48.9	9.9						
	7.9	2.7	6.1	1400	37.9	29.9	0.79	3.81	50.9	9.9						
	10.5	5.0	11.6	1050	37.1	26.6	0.72	3.52	49.1	10.5						
	10.5	5.0	11.6	1400	38.6	30.1	0.78	3.67	51.1	10.5						
110	5.3	1.2	2.7	1050	32.8	25.5	0.78	4.41	47.9	7.4						
	5.3	1.2	2.7	1400	34.2	28.9	0.85	4.60	49.9	7.4						
	7.9	2.6	5.9	1050	34.1	25.7	0.76	4.11	48.1	8.3						
	7.9	2.6	5.9	1400	35.5	29.1	0.82	4.28	50.1	8.3						
	10.5	4.8	11.2	1050	34.8	25.9	0.75	3.96	48.4	8.8						
	10.5	4.8	11.2	1400	36.2	29.4	0.81	4.12	50.4	8.8						
120	5.3	1.1	2.6	1050	30.2	24.8	0.82	4.95	47.1	6.1						
	5.3	1.1	2.6	1400	31.4	28.0	0.89	5.15	49.1	6.1						
	7.9	2.5	5.7	1050	31.5	25.0	0.79	4.61	47.3	6.8						
	7.9	2.5	5.7	1400	32.8	28.3	0.86	4.80	49.3	6.8						
	10.5	4.7	10.8	1050	32.3	25.3	0.78	4.45	47.6	7.3						
	10.5	4.7	10.8	1400	33.7	28.6	0.85	4.63	49.5	7.3						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
AHRI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.
Table does not reflect fan or pump power corrections for AHRI/ISO conditions.
All performance is based upon the lower voltage of dual voltage rated units.
Performance stated is at the rated power supply; performance may vary as the power supply varies from the rated.
Operation below 40°F EWT is based upon a 15% methanol antifreeze solution.
Operation below 60°F EWT requires optional insulated water/refrigerant circuit.
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Performance Data – TR H/V 048

1,600 CFM Nominal (Rated) Airflow

Performance capacities shown in thousands of Btuh

EWT °F	GPM	WPD		Cooling - EAT 80/67°F							Heating - EAT 70°F					
		PSI	FT	Airflow CFM	TC	SC	Sens/Tot Ratio	kW	HR	EER	Airflow CFM	HC	kW	HE	LAT	COP
20	12.0	6.8	15.6	Operation not recommended							1200	30.9	3.54	19.6	94	2.56
	12.0	6.8	15.6								1600	31.6	3.18	20.9	88	2.92
30	6.0	1.8	4.1	1200	56.4	34.4	0.61	2.25	64.0	25.1	1200	33.9	3.60	22.3	96	2.76
	6.0	1.8	4.1	1600	58.8	39.0	0.66	2.34	66.7	25.1	1600	34.7	3.24	23.8	90	3.14
	9.0	3.4	7.8	1200	57.5	34.6	0.60	2.11	64.6	27.2	1200	34.4	3.63	22.7	97	2.78
	9.0	3.4	7.8	1600	59.8	39.1	0.65	2.20	67.2	27.2	1600	35.3	3.26	24.2	90	3.17
	12.0	6.2	14.3	1200	57.9	34.5	0.60	2.05	64.8	28.2	1200	35.1	3.65	23.3	97	2.82
	12.0	6.2	14.3	1600	60.3	39.1	0.65	2.14	67.5	28.2	1600	36.0	3.27	24.9	91	3.22
40	6.0	1.6	3.7	1200	54.8	34.0	0.62	2.47	63.2	22.2	1200	37.9	3.70	25.8	99	3.00
	6.0	1.6	3.7	1600	57.1	38.5	0.67	2.57	65.8	22.2	1600	38.8	3.33	27.5	92	3.42
	9.0	3.1	7.2	1200	56.0	34.3	0.61	2.31	63.8	24.3	1200	39.5	3.74	27.2	100	3.10
	9.0	3.1	7.2	1600	58.3	38.9	0.67	2.40	66.4	24.3	1600	40.5	3.36	29.1	93	3.53
	12.0	5.8	13.4	1200	56.6	34.5	0.61	2.23	64.1	25.4	1200	40.7	3.76	28.3	101	3.18
	12.0	5.8	13.4	1600	58.9	39.0	0.66	2.32	66.8	25.4	1600	41.7	3.37	30.2	94	3.62
50	6.0	1.5	3.4	1200	52.9	33.3	0.63	2.72	62.1	19.4	1200	43.6	3.81	31.0	104	3.36
	6.0	1.5	3.4	1600	55.1	37.7	0.68	2.83	64.7	19.4	1600	44.7	3.42	33.0	96	3.83
	9.0	3.0	6.8	1200	54.3	33.8	0.62	2.53	62.9	21.4	1200	44.9	3.85	32.1	105	3.42
	9.0	3.0	6.8	1600	56.5	38.3	0.68	2.64	65.5	21.4	1600	46.0	3.46	34.3	97	3.90
	12.0	5.5	12.7	1200	55.0	34.0	0.62	2.45	63.2	22.5	1200	46.0	3.87	33.1	106	3.49
	12.0	5.5	12.7	1600	57.2	38.5	0.67	2.55	65.8	22.5	1600	47.1	3.48	35.3	97	3.98
60	6.0	1.4	3.2	1200	50.7	32.5	0.64	3.02	61.0	16.8	1200	48.2	3.91	35.0	107	3.61
	6.0	1.4	3.2	1600	52.8	36.8	0.70	3.15	63.5	16.8	1600	49.3	3.51	37.4	99	4.11
	9.0	2.8	6.5	1200	52.3	33.1	0.63	2.81	61.8	18.6	1200	50.5	3.96	37.1	109	3.74
	9.0	2.8	6.5	1600	54.5	37.5	0.69	2.92	64.4	18.6	1600	51.8	3.56	39.6	100	4.26
	12.0	5.3	12.2	1200	53.0	33.4	0.63	2.70	62.2	19.6	1200	51.8	3.99	38.3	110	3.81
	12.0	5.3	12.2	1600	55.2	37.8	0.68	2.81	64.8	19.6	1600	53.1	3.58	40.9	101	4.34
70	6.0	1.3	3.0	1200	48.3	31.5	0.65	3.38	59.9	14.3	1200	53.5	4.02	39.8	111	3.90
	6.0	1.3	3.0	1600	50.3	35.7	0.71	3.52	62.3	14.3	1600	54.8	3.61	42.4	102	4.44
	9.0	2.7	6.3	1200	50.0	32.2	0.64	3.13	60.7	16.0	1200	56.2	4.08	42.2	113	4.03
	9.0	2.7	6.3	1600	52.1	36.4	0.70	3.25	63.2	16.0	1600	57.5	3.67	45.0	103	4.60
	12.0	5.1	11.8	1200	50.9	32.5	0.64	3.01	61.1	16.9	1200	57.6	4.12	43.4	114	4.10
	12.0	5.1	11.8	1600	53.0	36.8	0.70	3.13	63.6	16.9	1600	59.0	3.70	46.4	104	4.68
80	6.0	1.3	2.9	1200	45.7	30.5	0.67	3.79	58.6	12.1	1200	58.8	4.14	44.5	115	4.16
	6.0	1.3	2.9	1600	47.6	34.5	0.72	3.94	61.0	12.1	1600	60.2	3.72	47.5	105	4.74
	9.0	2.6	6.1	1200	47.5	31.2	0.66	3.50	59.5	13.6	1200	61.7	4.21	47.1	118	4.29
	9.0	2.6	6.1	1600	49.5	35.3	0.71	3.64	61.9	13.6	1600	63.2	3.78	50.2	107	4.90
	12.0	4.9	11.4	1200	48.4	31.6	0.65	3.37	59.9	14.4	1200	63.3	4.25	48.4	119	4.36
	12.0	4.9	11.4	1600	50.4	35.7	0.71	3.50	62.4	14.4	1600	64.8	3.82	51.7	107	4.97
85	6.0	1.2	2.8	1200	44.3	29.9	0.68	4.02	58.0	11.1	1200	61.3	4.20	46.7	117	4.28
	6.0	1.2	2.8	1600	46.1	33.8	0.73	4.19	60.4	11.1	1600	62.8	3.78	49.9	106	4.88
	9.0	2.6	6.0	1200	46.2	30.6	0.66	3.72	58.8	12.5	1200	64.3	4.28	49.4	120	4.40
	9.0	2.6	6.0	1600	48.1	34.7	0.72	3.87	61.3	12.5	1600	65.9	3.84	52.7	108	5.02
	12.0	4.9	11.3	1200	47.1	31.0	0.66	3.57	59.3	13.2	1200	65.9	4.32	50.7	121	4.47
	12.0	4.9	11.3	1600	49.0	35.1	0.72	3.72	61.7	13.2	1600	67.5	3.88	54.1	109	5.09
90	6.0	1.2	2.8	1200	42.9	29.3	0.68	4.26	57.4	10.1	1200	63.9	4.27	49.0	119	4.39
	6.0	1.2	2.8	1600	44.6	33.2	0.74	4.43	59.8	10.1	1600	65.5	3.83	52.3	108	5.01
	9.0	2.6	5.9	1200	44.8	30.1	0.67	3.93	58.2	11.4	1200	66.9	4.35	51.7	122	4.51
	9.0	2.6	5.9	1600	46.6	34.1	0.73	4.10	60.6	11.4	1600	68.6	3.91	55.1	110	5.14
	12.0	4.8	11.1	1200	45.7	30.5	0.67	3.78	58.6	12.1	1200	68.5	4.39	53.0	123	4.57
	12.0	4.8	11.1	1600	47.6	34.5	0.72	3.94	61.1	12.1	1600	70.2	3.95	56.6	111	5.21
100	6.0	1.2	2.7	1200	39.8	28.2	0.71	4.79	56.2	8.3	Operation not recommended					
	6.0	1.2	2.7	1600	41.4	31.9	0.77	4.99	58.5	8.3						
	9.0	2.5	5.8	1200	41.8	28.9	0.69	4.43	57.0	9.4						
	9.0	2.5	5.8	1600	43.5	32.7	0.75	4.62	59.3	9.4						
	12.0	4.7	10.9	1200	42.8	29.3	0.69	4.26	57.4	10.0						
	12.0	4.7	10.9	1600	44.6	33.2	0.74	4.44	59.7	10.0						
110	6.0	1.1	2.6	1200	36.5	26.9	0.74	5.40	55.0	6.8						
	6.0	1.1	2.6	1600	38.0	30.4	0.80	5.62	57.3	6.8						
	9.0	2.4	5.6	1200	38.6	27.7	0.72	5.00	55.8	7.7						
	9.0	2.4	5.6	1600	40.2	31.4	0.78	5.21	58.0	7.7						
	12.0	4.6	10.6	1200	39.7	28.1	0.71	4.81	56.1	8.2						
	12.0	4.6	10.6	1600	41.3	31.8	0.77	5.01	58.5	8.2						
120	6.0	1.1	2.5	1200	33.0	25.5	0.77	6.09	53.9	5.4						
	6.0	1.1	2.5	1600	34.4	28.9	0.84	6.34	56.1	5.4						
	9.0	2.4	5.5	1200	35.2	26.4	0.75	5.65	54.6	6.2						
	9.0	2.4	5.5	1600	36.7	29.9	0.81	5.88	56.8	6.2						
	12.0	4.5	10.4	1200	36.3	26.8	0.74	5.44	55.0	6.7						
	12.0	4.5	10.4	1600	37.8	30.3	0.80	5.66	57.2	6.7						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
AHRI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.
Table does not reflect fan or pump power corrections for AHRI/ISO conditions.
All performance is based upon the lower voltage of dual voltage rated units.
Performance stated is at the rated power supply; performance may vary as the power supply varies from the rated.
Operation below 40°F EWT is based upon a 15% methanol antifreeze solution.
Operation below 60°F EWT requires optional insulated water/refrigerant circuit.
See performance correction tables for operating conditions other than those listed above.
See Performance Data Selection Notes for operation in the shaded areas.

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Performance Data – TR H/V 060

2,000 CFM Nominal (Rated) Airflow

Performance capacities shown in thousands of Btuh

EWT °F	GPM	WPD		Cooling - EAT 80/67°F							Heating - EAT 70°F					
		PSI	FT	Airflow CFM	TC	SC	Sens/Tot Ratio	kW	HR	EER	Airflow CFM	HC	kW	HE	LAT	COP
20	15.0	14.0	32.2	Operation not recommended							1460	41.6	4.98	25.8	96	2.45
	15.0	14.0	32.2								1950	42.6	4.48	27.5	90	2.79
30	7.5	3.4	7.9	1460	68.2	41.6	0.61	3.00	78.3	22.8	1460	45.5	5.08	29.2	99	2.62
	7.5	3.4	7.9	1950	71.0	47.0	0.66	3.12	81.6	22.8	1950	46.6	4.56	31.1	92	2.99
	11.3	6.8	15.8	1460	69.0	41.5	0.60	2.87	78.7	24.0	1460	47.4	5.13	30.9	100	2.71
	11.3	6.8	15.8	1950	71.8	47.0	0.65	2.99	82.0	24.0	1950	48.6	4.61	33.0	93	3.09
	15.0	12.6	29.2	1460	69.3	41.3	0.60	2.82	78.8	24.6	1460	48.5	5.16	31.8	101	2.75
	15.0	12.6	29.2	1950	72.1	46.8	0.65	2.94	82.1	24.6	1950	49.7	4.64	34.0	94	3.14
40	7.5	3.1	7.0	1460	66.6	41.1	0.62	3.21	77.4	20.8	1460	52.2	5.27	35.1	103	2.91
	7.5	3.1	7.0	1950	69.3	46.5	0.67	3.34	80.6	20.8	1950	53.5	4.73	37.5	95	3.31
	11.3	6.3	14.6	1460	67.8	41.5	0.61	3.05	78.1	22.2	1460	54.8	5.34	37.3	105	3.01
	11.3	6.3	14.6	1950	70.6	47.0	0.67	3.18	81.3	22.2	1950	56.1	4.80	39.8	97	3.43
	15.0	11.8	27.2	1460	68.3	41.6	0.61	2.98	78.4	22.9	1460	56.2	5.38	38.5	106	3.06
	15.0	11.8	27.2	1950	71.1	47.0	0.66	3.10	81.6	22.9	1950	57.5	4.83	41.1	97	3.49
50	7.5	2.8	6.4	1460	64.7	40.3	0.62	3.47	76.4	18.7	1460	59.5	5.48	41.4	108	3.18
	7.5	2.8	6.4	1950	67.3	45.6	0.68	3.61	79.6	18.7	1950	60.9	4.92	44.2	99	3.63
	11.3	5.9	13.7	1460	66.0	40.9	0.62	3.28	77.1	20.1	1460	62.6	5.57	44.1	110	3.29
	11.3	5.9	13.7	1950	68.7	46.3	0.67	3.41	80.3	20.1	1950	64.1	5.01	47.1	100	3.75
	15.0	11.1	25.7	1460	66.7	41.2	0.62	3.19	77.5	20.9	1460	64.3	5.63	45.6	111	3.35
	15.0	11.1	25.7	1950	69.4	46.6	0.67	3.32	80.7	20.9	1950	65.9	5.05	48.7	101	3.82
60	7.5	2.6	6.0	1460	62.4	39.3	0.63	3.78	75.3	16.5	1460	66.9	5.70	47.8	112	3.44
	7.5	2.6	6.0	1950	65.0	44.5	0.69	3.93	78.4	16.5	1950	68.5	5.12	51.0	103	3.92
	11.3	5.6	13.0	1460	63.7	39.9	0.63	3.56	75.8	17.9	1460	70.4	5.82	50.9	115	3.55
	11.3	5.6	13.0	1950	66.3	45.1	0.68	3.70	78.9	17.9	1950	72.1	5.22	54.4	104	4.05
	15.0	10.7	24.6	1460	64.2	40.0	0.62	3.45	75.9	18.6	1460	72.4	5.88	52.6	116	3.61
	15.0	10.7	24.6	1950	66.8	45.3	0.68	3.59	79.0	18.6	1950	74.1	5.28	56.2	105	4.12
70	7.5	2.4	5.6	1460	59.6	38.0	0.64	4.15	73.7	14.3	1460	74.2	5.93	54.1	117	3.66
	7.5	2.4	5.6	1950	62.0	43.0	0.69	4.32	76.7	14.3	1950	75.9	5.33	57.8	106	4.18
	11.3	5.4	12.5	1460	61.1	38.6	0.63	3.89	74.3	15.7	1460	78.0	6.05	57.5	119	3.78
	11.3	5.4	12.5	1950	63.6	43.7	0.69	4.05	77.4	15.7	1950	79.9	5.44	61.4	108	4.31
	15.0	10.3	23.7	1460	61.6	38.8	0.63	3.77	74.4	16.3	1460	80.1	6.12	59.2	121	3.84
	15.0	10.3	23.7	1950	64.2	43.9	0.68	3.92	77.5	16.3	1950	82.0	5.50	63.2	109	4.37
80	7.5	2.3	5.4	1460	56.4	36.7	0.65	4.59	72.1	12.3	1460	81.1	6.15	60.1	121	3.86
	7.5	2.3	5.4	1950	58.8	41.5	0.71	4.78	75.1	12.3	1950	83.0	5.52	64.2	109	4.41
	11.3	5.2	12.0	1460	58.1	37.3	0.64	4.29	72.7	13.5	1460	84.9	6.27	63.4	124	3.97
	11.3	5.2	12.0	1950	60.4	42.2	0.70	4.47	75.7	13.5	1950	87.0	5.63	67.7	111	4.52
	15.0	9.9	22.9	1460	58.7	37.5	0.64	4.15	72.8	14.1	1460	86.9	6.33	65.1	125	4.02
	15.0	9.9	22.9	1950	61.1	42.4	0.69	4.32	75.8	14.1	1950	89.0	5.69	69.5	112	4.58
85	7.5	2.3	5.2	1460	54.8	36.1	0.66	4.84	71.3	11.4	1460	84.1	6.25	62.8	123	3.95
	7.5	2.3	5.2	1950	57.0	40.8	0.72	5.04	74.2	11.4	1950	86.2	5.6	67.0	111	4.50
	11.3	5.1	11.8	1460	56.4	36.6	0.65	4.52	71.9	12.5	1460	87.8	6.4	65.9	126	4.04
	11.3	5.1	11.8	1950	58.7	41.4	0.70	4.71	74.8	12.5	1950	89.9	5.7	70.4	113	4.61
	15.0	9.8	22.6	1460	57.1	36.8	0.64	4.37	72.0	13.1	1460	89.6	6.4	67.5	127	4.09
	15.0	9.8	22.6	1950	59.5	41.6	0.70	4.55	75.0	13.1	1950	91.8	5.8	72.0	114	4.66
90	7.5	2.2	5.1	1460	53.1	35.4	0.67	5.09	70.5	10.4	1460	87.2	6.35	65.4	125	4.03
	7.5	2.2	5.1	1950	55.3	40.1	0.73	5.30	73.4	10.4	1950	89.3	5.70	69.9	112	4.59
	11.3	5.0	11.6	1460	54.8	35.9	0.66	4.76	71.0	11.5	1460	90.7	6.45	68.4	128	4.12
	11.3	5.0	11.6	1950	57.1	40.7	0.71	4.95	74.0	11.5	1950	92.9	5.80	73.1	114	4.70
	15.0	9.6	22.2	1460	55.5	36.1	0.65	4.60	71.2	12.1	1460	92.3	6.50	69.8	129	4.16
	15.0	9.6	22.2	1950	57.8	40.9	0.71	4.78	74.1	12.1	1950	94.5	5.84	74.5	115	4.74
100	7.5	2.1	4.9	1460	49.6	34.3	0.69	5.67	69.0	8.8	Operation not recommended					
	7.5	2.1	4.9	1950	51.7	38.9	0.75	5.90	71.9	8.8						
	11.3	4.9	11.3	1460	51.4	34.7	0.68	5.29	69.5	9.7						
	11.3	4.9	11.3	1950	53.5	39.3	0.73	5.51	72.3	9.7						
	15.0	9.4	21.7	1460	52.1	34.8	0.67	5.11	69.6	10.2						
	15.0	9.4	21.7	1950	54.2	39.4	0.73	5.32	72.4	10.2						
110	7.5	2.0	4.7	1460	46.6	33.8	0.73	6.33	68.2	7.4						
	7.5	2.0	4.7	1950	48.5	38.2	0.79	6.59	71.0	7.4						
	11.3	4.8	11.0	1460	47.8	33.6	0.70	5.91	68.0	8.1						
	11.3	4.8	11.0	1950	49.8	38.1	0.76	6.15	70.8	8.1						
	15.0	9.2	21.2	1460	48.6	33.7	0.69	5.71	68.2	8.5						
	15.0	9.2	21.2	1950	50.6	38.2	0.75	5.94	71.0	8.5						
120	7.5	2.0	4.6	1460	43.0	33.1	0.77	7.07	67.2	6.1						
	7.5	2.0	4.6	1950	44.7	37.5	0.84	7.36	70.0	6.1						
	11.3	4.7	10.7	1460	44.2	32.8	0.74	6.61	66.8	6.7						
	11.3	4.7	10.7	1950	46.0	37.1	0.81	6.88	69.6	6.7						
	15.0	9.0	20.7	1460	44.9	32.7	0.73	6.38	66.8	7.0						
	15.0	9.0	20.7	1950	46.8	37.0	0.79	6.64	69.5	7.0						

Interpolation is permissible; extrapolation is not.
All entering air conditions are 80°F DB and 67°F WB in cooling, and 70°F DB in heating.
AHRI/ISO certified conditions are 80.6°F DB and 66.2°F WB in cooling and 68°F DB in heating.
Table does not reflect fan or pump power corrections for AHRI/ISO conditions.
All performance is based upon the lower voltage of dual voltage rated units.
Performance stated is at the rated power supply; performance may vary as the power supply varies from the rated.
Operation below 40°F EWT is based upon a 15% methanol antifreeze solution.
Operation below 60°F EWT requires optional insulated water/refrigerant circuit.
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Correction Tables – Entering Air Temperature

Cooling Corrections											
Ent Air WB° F	Total Clg Capacity	Sens Clg Cap Multipliers - Entering DB° F								Power	Heat of Rejection
		65	70	75	80	80.6	85	90	95		
50	0.7800	0.9778	*	*	*	*	*	*	*	0.9972	0.8243
55	0.8327	0.8966	1.0556	*	*	*	*	*	*	0.9980	0.8667
60	0.8954	0.7505	0.9184	1.1056	*	*	*	*	*	0.9988	0.9169
65	0.9681		0.6778	0.8992	1.1213	1.1480	1.3439	*	*	0.9996	0.9747
66.2	0.9871		0.6103	0.8420	1.0698	1.0969	1.2938	*	*	0.9999	0.9897
67	1.0000		0.5507	0.7782	1.0000	1.0262	1.2161	1.4266	*	1.0000	1.0000
70	1.0508			0.6408	0.8856	0.9135	1.1082	1.3087	1.4869	1.0005	1.0403
75	1.1435				0.6085	0.6403	0.8566	1.0663	1.2376	1.0014	1.1135

* Sensible capacity equals total capacity.
AHRI/ISO/ASHRAE 13256-1 uses entering air conditions of Cooling - 80.6°F DB/ 66.2°F WB, and Heating - 68°F DB/ 59°F WB entering air temperature.
For ClimaDry® equipped units the minimum entering air temperature when cooling is 70ºF DB / 61ºF WB. Operation below this minimum may result in nuisance faults.

Heating Corrections			
Ent Air DB° F	Heating Capacity	Power	Heat of Extraction
45	1.0507	0.7802	1.1314
50	1.0327	0.8227	1.0953
55	1.0195	0.8683	1.0646
60	1.0102	0.9168	1.0380
65	1.0033	0.9680	1.0139
68	1.0000	1.0000	1.0000
70	0.9979	1.0218	0.9908
75	0.9928	1.0781	0.9673
80	0.9866	1.1367	0.9419

Air Flow Correction Table

Airflow	Heating			Cooling				
% of Rated	Heating Capacity	Heating Power	Heat of Extraction	Total Capacity	Sensible Capacity	Sens/Tot Ratio	Power	Heat of Rejection
75	0.9764	1.1134	0.9368	0.9605	0.8837	0.9200	0.9606	0.9605
81.25	0.9829	1.0789	0.9551	0.9730	0.9130	0.9384	0.9691	0.9722
87.5	0.9889	1.0484	0.9717	0.9837	0.9393	0.9548	0.9784	0.9826
93.75	0.9947	1.0222	0.9867	0.9927	0.9668	0.9739	0.9887	0.9919
100	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
106.25	1.0050	0.9820	1.0116	1.0055	1.0434	1.0377	1.0122	1.0069
112.5	1.0096	0.9681	1.0216	1.0093	1.1016	1.0915	1.0253	1.0126
118.75	1.0138	0.9583	1.0299	1.0113	1.1790	1.1658	1.0394	1.0171
125	1.0177	0.9527	1.0365	1.0116	1.2798	1.2652	1.0544	1.0204

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Correction Tables – Antifreeze and Water Pressure Drop Adder for Options

Antifreeze Type	Antifreeze %	Cooling			Heating		WPD Corr. Fct. EWT 30°F
		EWT 90°F			EWT 30°F		
		Total Cap	Sens Cap	Power	Htg Cap	Power	
Water	0	1.000	1.000	1.000	1.000	1.000	1.000
Propylene Glycol	5	0.995	0.995	1.003	0.989	0.997	1.070
	15	0.986	0.986	1.009	0.968	0.990	1.210
	25	0.978	0.978	1.014	0.947	0.983	1.360
Methanol	5	0.997	0.997	1.002	0.989	0.997	1.070
	15	0.990	0.990	1.007	0.968	0.990	1.160
	25	0.982	0.982	1.012	0.949	0.984	1.220
Ethanol	5	0.998	0.998	1.002	0.981	0.994	1.140
	15	0.994	0.994	1.005	0.944	0.983	1.300
	25	0.986	0.986	1.009	0.917	0.974	1.360
Ethylene Glycol	5	0.998	0.998	1.002	0.993	0.998	1.040
	15	0.994	0.994	1.004	0.980	0.994	1.120
	25	0.988	0.988	1.008	0.966	0.990	1.200

Motorized Water Valve Option Corrections

Model	Cv	MOPD	WPD Adders		
			GPM	PSI	FT
006	4.9	150	0.8	0.03	0.06
	4.9	150	1.1	0.05	0.12
	4.9	150	1.5	0.09	0.22
009	4.9	150	1.1	0.05	0.12
	4.9	150	1.7	0.12	0.28
	4.9	150	2.2	0.2	0.47
012	4.9	150	1.5	0.09	0.22
	4.9	150	2.3	0.22	0.51
	4.9	150	3	0.37	0.87
015	4.9	150	1.8	0.13	0.31
	4.9	150	2.6	0.28	0.65
	4.9	150	3.5	0.51	1.18
018	4.9	150	2.3	0.22	0.51
	4.9	150	3.4	0.48	1.11
	4.9	150	4.5	0.84	1.95
024	4.9	150	3	0.37	0.87
	4.9	150	4.5	0.84	1.95
	4.9	150	6	1.5	3.46
030	10.3	150	3.8	0.14	0.31
	10.3	150	5.5	0.29	0.66
	10.3	150	7.5	0.53	1.22
036	10.3	150	4.5	0.19	0.44
	10.3	150	6.8	0.44	1.01
	10.3	150	9	0.76	1.76
042	10.3	150	5.3	0.26	0.61
	10.3	150	7.9	0.59	1.36
	10.3	150	10.5	1.04	2.4
048	10.3	150	6	0.34	0.78
	10.3	150	9	0.76	1.76
	10.3	150	12	1.36	3.14
060	10.3	150	7.5	0.53	1.22
	10.3	150	11.3	1.2	2.78
	10.3	150	15	2.12	4.9

ClimaDry® II Option Corrections - (When Operating in Non-ClimaDry® Mode)

Model	WPD Adders		
	GPM	PSI	FT
024	3.0	0.881	2.036
	4.5	1.983	4.581
030	3.8	0.622	1.437
	5.6	1.351	3.121
036	4.5	0.872	2.015
	6.8	1.992	4.602
042	5.3	1.210	2.796
	7.9	2.689	6.212
048	6.0	1.551	3.583
	9.0	3.490	8.062
060	7.5	1.491	3.445
	11.3	3.385	7.820

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Blower Performance Data – Standard Unit

Airflow in CFM with Wet Coil and Clean Air Filter

Model	Fan Speed	Rated Airflow	Min CFM	Airflow (cfm) at External Static Pressure (in. wg)															
				0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.60	0.70	0.80	0.90	1.00
TR 006	HIGH	220	150			310	300	290	280	270	250	230	210	180					
	MEDIUM					260	250	240	230	210	200	190	150						
	LOW					210	200	190	180	160	150								
TR 009	HIGH	325	225			410	400	380	360	350	330	320	300	280					
	MEDIUM					390	370	360	340	320	310	290	280	260					
	LOW					340	330	322	310	300	280	260	250						
TR 012	HIGH	400	300			470	460	450	440	430	420	400	390	380	320				
	MEDIUM					420	410	400	390	380	370	360	350	340					
	LOW					360	360	350	340	320	320	310	300						
TR 015	HIGH	525	375			745	725	706	696	686	666	637	588	539	451				
	MEDIUM			686	676	666	657	647	637	617	608	588	549	510					
	LOW			608	598	588	578	568	559	549	529	510	480	451					
TR 018	HIGH	600	450			745	725	706	696	686	666	637	588	539	451				
	MEDIUM			686	676	666	657	647	637	617	608	588	549	510					
	LOW			608	598	588	578	568	559	549	529	510	480	451					
TR 024	HIGH	800	600									950	922	884	827	732	656		
	MEDIUM			960	950	941	931	912	893	874	855	836	817	789	732	665			
	LOW			779	770	760	751	741	732	722	713	694	684	665	618				
TR 030	HIGH	1000	750							1102	1074	1045	1017	979	903	798			
	MEDIUM			1188	1169	1140	1121	1093	1064	1036	1017	988	960	922	846				
	LOW			1064	1045	1017	998	979	960	931	912	884	855	827	751				
TR 036	HIGH	1200	900	1474	1455	1436	1416	1387	1358	1329	1310	1280	1232	1174	1077	931			
	MEDIUM			1174	1164	1106	1106	1096	1096	1086	1077	1067	1038	1009	912				
	LOW			980	980	970	970	960	960	951	951	941	922	902					
TR 042	HIGH	1350	1050	1558	1530	1501	1473	1444	1416	1378	1340	1302	1264	1226	1131				
	MEDIUM			1416	1397	1368	1349	1321	1302	1273	1245	1207	1169	1131	1064				
	LOW			1083	1083	1074	1074	1064	1055										
TR 048	HIGH	1600	1200					1881	1853	1815	1767	1710	1653	1596	1416	1216	1216		
	MEDIUM			1843	1824	1805	1786	1767	1729	1682	1653	1625	1577	1520	1340				
	LOW			1682	1663	1644	1625	1606	1587	1568	1530	1492	1435	1378	1264				
TR 060	HIGH	2000	1500	2195	2195	2185	2176	2156	2117	2078	2048	2019	1999	1970	1921	1842	1754	1627	
	MEDIUM			2009	2009	1999	1980	1950	1931	1901	1882	1852	1823	1793	1744	1676	1588		
	LOW			1813	1813	1803	1793	1774	1764	1744	1725	1695	1666	1637	1568				

Black areas denote ESP where operation is not recommended.
Units factory shipped on medium speed. Other speeds require field selection.
All airflow is rated and shown above at the lower voltage if unit is dual voltage rated, e.g. 208V for 208-230V units.
Only two speed fan (H & M) available on 575V units.
Performance stated is at the rated power supply, performance may vary as the power supply varies from the rated.

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Blower Performance Data – High Static

Model	Fan Speed	Rated Airflow	Min CFM	Airflow (cfm) at External Static Pressure (in. wg)														
				0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.60	0.70	0.80	0.90	1.00
TR 015	HS HI	525	375				774	764	755	745	735	715	696	676	637	519			
	HS MED			735	725	706	696	686	676	657	657	647	637	617	588	480			
	HS LOW			657	647	627	617	608	598	588	578	568	568	559	519				
TR 018	HS HI	600	450				774	764	755	745	735	715	696	676	637	519			
	HS MED			735	725	706	696	686	676	657	657	647	637	617	588	480			
	HS LOW			657	647	627	617	608	598	588	578	568	568	559	519				
TR 024	HS HI	800	600											979	903	798	665		
	HS MED											988	960	922	846	713			
	HS LOW							979	960	931	912	884	855	827	751	675			
TR 030	HS HI	1000	750											1102	988	874	760		
	HS MED											1074	1026	979	884	779			
	HS LOW			998	988	979	960	941	931	912	893	865	836	798					
TR 036	HS HI	1200	900									1484	1455	1426	1358	1251	1135	931	
	HS MED			1319	1310	1300	1290	1280	1271	1261	1242	1222	1213	1193	1116	1038			
	HS LOW			999	989	980	980	970	970	960	951	931	922	902					
TR 042	HS HI	1350	1050					1473	1463	1444	1425	1397	1387	1378	1311	1178			
	HS MED			1321	1311	1302	1292	1283	1273	1254	1245	1235	1216	1188	1121				
	HS LOW																		
TR 048	HS HI	1600	1200									1957	1938	1910	1862	1786	1701	1577	1435
	HS MED			1948	1948	1938	1919	1891	1872	1843	1824	1796	1767	1739	1691	1625	1539	1416	1254
	HS LOW			1758	1758	1748	1739	1720	1710	1691	1672	1644	1615	1587	1520	1435	1311		
TR 060	HS HI	2000	1500	2352	2352	2342	2332	2323	2313	2293	2274	2254	2225	2195	2156	2087	2019	1940	1852
	HS MED			2117	2117	2107	2107	2097	2068	2038	2019	1999	1989	1980	1940	1891	1842	1460	1715
	HS LOW			1891	1891	1882	1882	1872	1862	1852	1852	1842	1833	1813	1793	1764	1715	1666	1588

Black areas denote ESP where operation is not recommended.
Units factory shipped on medium speed. Other speeds require field selection.
All airflow is rated and shown above at the lower voltage if unit is dual voltage rated, e.g. 208V for 208-230V units.
Only two speed fan (H & M) available on 575V units.
Performance stated is at the rated power supply, performance may vary as the power supply varies from the rated.

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Blower Performance Data with ClimaDry®

Model	Fan Speed	Rated Airflow	Min CFM	Airflow (cfm) Standard TR w/ ClimaDry® (in. wg)								
				0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80
TR 024	HIGH	800	600				1002	932	871	769	681	530
	MEDIUM			985	959	918	880	834	770	702	602	
	LOW			798	783	764	729	699	652	602		
TR 030	HIGH	1000	750			1161	1099	1029	945	841	748	
	MEDIUM			1199	1145	1090	1035	968	888	748		
	LOW			1074	1030	977	929	869	789	709		
TR 036	HIGH	1200	900	1478	1425	1374	1316	1213	1114	962	906	
	MEDIUM			1142	1133	1123	1095	1036	940			
	LOW			997	988	979	968	926				
TR 042	HIGH	1350	1050	1582	1517	1453	1373	1289	1191	1095		
	MEDIUM			1443	1389	1336	1265	1191	1095			
	LOW			1127	1120	1098	1056					
TR 048	HIGH	1600	1200		1981	1906	1796	1675	1485	1390	1280	
	MEDIUM			1901	1859	1771	1707	1600	1407	1220		
	LOW			1728	1685	1647	1567	1449	1329			
TR 060	HIGH	2000	1500	2230	2200	2120	2060	2010	1960	1880	1790	1660
	MEDIUM			2040	1990	1940	1890	1830	1780	1710	1620	
	LOW			1840	1810	1780	1730	1670	1600	1510		

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Units factory shipped on medium speed. Other speeds require field selection.
All airflow is rated and shown above at the lower voltage if unit is dual voltage rated, e.g. 208V for 208-230V units.
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Blower Performance Data – High Static with ClimaDry®

Model	Fan Speed	Rated Airflow	Min CFM	Airflow (cfm) at External Static Pressure w/ ClimaDry® (in. wg)												
				0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20
TR 024	HIGH	800	600						945	841	700					
	MEDIUM							968	888	748	620					
	LOW					977	929	869	789	709						
TR 030	HIGH	1000	750				1248	1155	1039	919	800	751				
	MEDIUM					1194	1128	1034	930	819	752					
	LOW			1026	992	955	914	841	752							
TR 036	HIGH	1200	900					1470	1397	1294	1173	955				
	MEDIUM			1339	1316	1297	1263	1227	1153	1066	1173					
	LOW			1011	996	988	964	929								
TR 042	HIGH	1350	1050	1587	1553	1523	1470	1452	1377	1244	1084					
	MEDIUM			1369	1349	1324	1296	1247	1179	1080						
	LOW															
TR 048	HIGH	1600	1200						1960	1880	1790	1660	1510	1335		
	MEDIUM				1990	1940	1890	1830	1780	1710	1620	1490	1320			
	LOW			1840	1810	1780	1730	1670	1600	1510	1380	1220				
TR 060	HIGH	2000	1500	2388	2372	2336	2298	2244	2195	2126	2055	1976	1893	1787	1657	1503
	MEDIUM			2152	2137	2077	2040	2016	1978	1933	1878	1821	1747	1656	1531	
	LOW			1923	1908	1893	1878	1852	1828	1796	1748	1698	1616	1533		

Black areas denote ESP where operation is not recommended.
Units factory shipped on medium speed. Other speeds require field selection.
All airflow is rated and shown above at the lower voltage if unit is dual voltage rated, e.g. 208V for 208-230V units.
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ClimaDry® II Option – Benefits and Application

ClimaDry® II Modulating Reheat Option

ClimateMaster's patented ClimaDry® II Dehumidification option is an innovative means of providing modulating reheat without the complication of refrigeration controls. ClimaDry® II is hot gas generated reheat, which utilizes one of the biggest advantages of a Water-Source Heat Pump (WSHP), the transfer of energy through the water piping system. ClimaDry® II simply diverts condenser water through a water-to-air coil that is placed after the evaporator coil. If condenser water is not warm enough, the internal "run-around" loop increases the water temperature with each pass through the condenser coil (see figure 1, below).

ClimaDry® II Benefits

ClimaDry® II is like no other reheat option on the market. Proportional reheat is controlled to the desired leaving air temperature setpoint (factory setpoint of 72°F, 22°C), no matter what the water loop temperature is. Since dehumidification operation will occur under less than full load cooling conditions a good percentage of the time, it is important to have a reheat function that provides 100% reheat in the spring and fall when the water loop is cool. Supply air temperature is field adjustable to +/- 3°F [+/- 1.7°C] for even greater flexibility with the optional potentiometer. It is recommended that the ClimaDry® supply air temperature be set to match the space cooling setpoint so that ClimaDry® does not impact room temperature. Competitors without ClimaDry® II typically use an on/off (non-modulating) refrigeration based reheat circuit, typically referred to as "Hot gas reheat" (HGR). HGR needs higher condensing temperatures to work well, typically 85°F [29°C] entering water temperature (EWT). With HGR, cooler water temperatures produce cooler supply air temperatures, which could overcool the space, requiring additional space heating from another source or a special auto-change-over relay to allow the unit to switch back and forth between reheat and heating. Rarely does HGR provide 100% reheat, like ClimaDry® II. ClimaDry® II has a simple and easy to troubleshoot refrigerant circuit. No switching valves or hard to diagnose leaky check valves are utilized. No unusual refrigerant pressures occur during the reheat mode. The ClimaDry® II refrigerant circuit is like every other ClimateMaster unit (without reheat), so everything the technician already knows applies to troubleshooting the ClimaDry® II refrigeration circuit. Plus, the water loop portion of the ClimaDry® II option is easy to understand and diagnose.

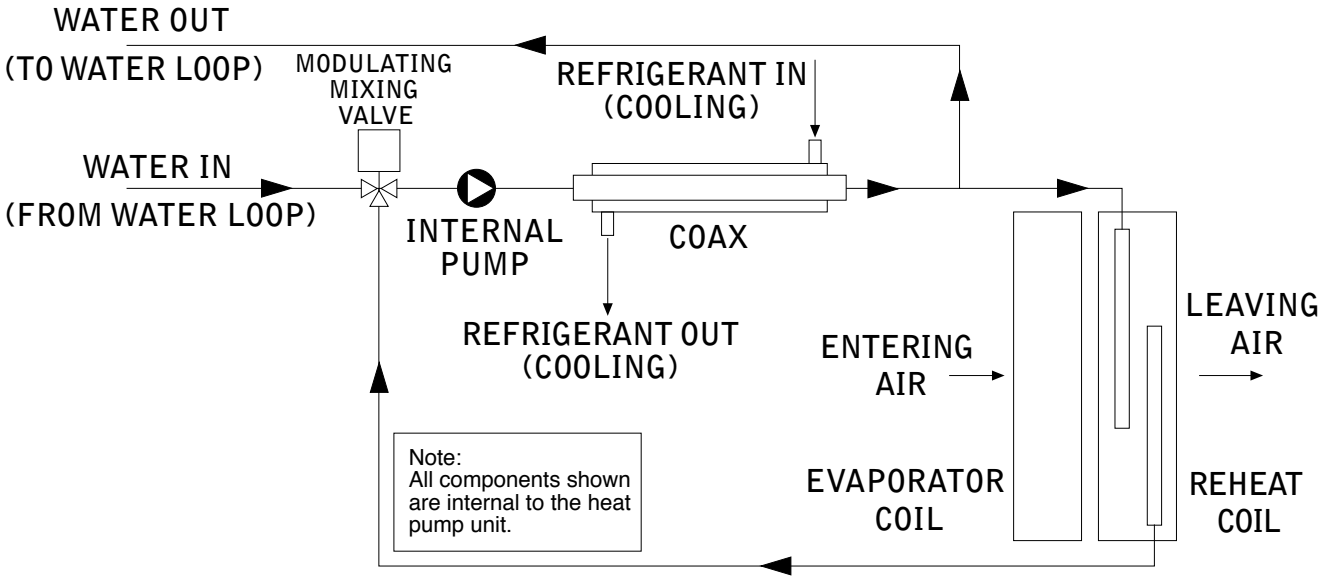
ClimaDry® II Applications

ClimaDry® II can be applied to a number of common applications, such as:

- Classrooms.
- Condominiums.
- Apartments.
- Computer rooms.
- Spaces with high latent loads like auditoriums, theaters, convention centers, etc.
- Most applications where humidity is a problem.

(Note: ClimaDry® is not for use in high fraction outdoor air applications or in applications with corrosive atmospheres, such as pool rooms.)

Figure 1: ClimaDry® II Schematic



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ClimaDry® II Option – Benefits and Application

With the ClimaDry® II option, return air from the space is cooled by the air-to-refrigerant (evaporator) coil, and then reheated by the water-to-air (reheat) coil to dehumidify the air, but maintain the same space temperature (thus operating as a dehumidifier).

The moisture removal capability of the heat pump is determined by the unit's latent capacity rating. Latent capacity equals Total capacity minus Sensible capacity. Using unit performance data from submittals (http://www.climatemaster.com/) select the correct model, use your maximum entering water temperature (EWT) and flow rate to select TC and SC. For example, at 80°F [26.7°C] EWT and 6.8 GPM, the moisture removal capability (latent capacity) of a ClimateMaster TR036 is 10.1 Mbtuh [3.0kW] as shown below.

Dividing the latent capacity by 1,069 BTU/LB of water vapor at 80°F DB and 67°F WB [26.7°C DB and 19.4°C WB] moist air enthalpy, converts the amount of moisture removal to pounds per hour (multiply pounds per hour by 0.4536 to obtain kg/hr). Calculations are shown in figure 2.

Most ClimateMaster heat pumps have a sensible-to-total (S/T) ratio of 0.72 to 0.82. Therefore, approximately, 25% of the cooling capacity is dedicated to latent cooling capacity (moisture removal). When selecting a unit with ClimaDry® II, the space sensible and latent loads should be calculated. If the unit will be used for space cooling, a unit with at least enough capacity to satisfy the building sensible load should be selected. If the latent cooling load is not satisfied by the selection, a larger unit with enough latent capacity will be required. If the unit will be used for dehumidification purposes only, the latent capacity is the only consideration necessary. In this case, sensible load is immaterial.

Figure 2: Example TR036 Performance

LC = TC - SC = 35.3 - 25.2 = 10.1 Mbtuh

10,100 Btuh ÷ 1069 = 9.4 lbs/hr

EWT °F	GPM	WPD		Cooling - EAT 80/67°F							Heating - EAT 70°F					
		PSI	FT	Airflow CFM	TC	SC	Sens/Tot Ratio	kW	HR	EER	Airflow CFM	HC	kW	HE	LAT	COP
70	4.5	1.2	2.7	860	34.6	22.5	0.65	2.46	42.9	14.0	860	43.1	3.47	31.4	116	3.64
	4.5	1.2	2.7	1150	36.0	25.5	0.71	2.56	44.7	14.0	1150	44.1	3.12	33.5	106	4.15
	6.8	2.1	4.9	860	35.8	22.9	0.64	2.28	43.6	15.7	860	45.2	3.55	33.2	119	3.74
	6.8	2.1	4.9	1150	37.3	25.9	0.70	2.38	45.4	15.7	1150	46.3	3.19	35.4	107	4.26
80	4.5	1.1	2.5	860	32.5	21.8	0.67	2.76	41.9	11.8	860	47.0	3.61	34.8	121	3.82
	4.5	1.1	2.5	1150	33.8	24.7	0.73	2.88	43.7	11.8	1150	48.2	3.24	37.1	109	4.36
	6.8	2.0	4.6	860	33.0	22.3	0.66	2.56	42.6	13.2	860	49.2	3.68	36.6	123	3.92
	6.8	2.0	4.6	1150	35.3	25.2	0.72	2.67	44.4	13.2	1150	50.4	3.30	39.1	111	4.47
85	4.5	1.0	2.4	860	31.5	21.5	0.68	2.90	41.5	10.8	860	48.8	3.67	36.3	123	3.90
	4.5	1.0	2.4	1150	32.8	24.4	0.74	3.05	43.3	10.8	1150	50.0	3.29	38.8	110	4.45
	6.8	1.9	4.4	860	32.8	21.9	0.67	2.72	42.1	12.1	860	50.9	3.73	38.1	125	4.00
	6.8	1.9	4.4	1150	34.1	24.8	0.73	2.84	43.8	12.1	1150	52.2	3.35	40.7	112	4.56
90	4.5	1.0	2.3	860	30.5	21.2	0.70	3.10	41.1	9.8	860	50.6	3.72	37.9	125	3.99
	4.5	1.0	2.3	1150	31.8	24.0	0.76	3.23	42.8	9.8	1150	51.9	3.34	40.4	112	4.54
	6.8	1.9	4.3	860	31.7	21.6	0.68	2.88	41.6	11.0	860	52.7	3.79	39.6	127	4.08
	6.8	1.9	4.3	1150	33.0	24.4	0.74	3.00	43.3	11.0	1150	54.0	3.40	42.3	113	4.65

Dividing the latent capacity by 1,069 BTU/LB of water vapor at 80°F DB and 67°F WB [26.7°C DB and 19.4°C WB] moist air enthalpy, converts the amount of moisture removal to pounds per hour (multiply pounds per hour by 0.4536 to obtain kg/hr).

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ClimaDry® II Option – Sequence of Operation

ClimaDry® II Sequence of Operation - A heat pump equipped with ClimaDry® II can operate in three modes; cooling, cooling with reheat (dehumidification), and heating. The cooling/heating modes are like any other ClimateMaster WSHP. The reversing valve ("O" signal) is energized in cooling, along with the compressor contactor(s) and blower relay. In the heating mode the reversing valve is de-energized. Almost any thermostat will activate the heat pump in heating or cooling modes. The DXM microprocessor board, which is required with the ClimaDry® II option, will accept either heat pump (Y,O) thermostats or non-heat pump (Y,W) thermostats. The reheat mode requires either a separate humidistat/ dehumidistat or a thermostat that has an integrated dehumidification function for activation. The DXM board is configured to work with either a humidistat or dehumidistat input to terminal "H". Upon receiving an "H" input, the DXM board will activate the cooling mode and engage reheat. Table 4 shows the relationship between thermostat input signals and unit operation. There are four operational inputs for single stage units and six operational inputs for dual stage units:

-Fan Only
-1st Stage Cooling
-2nd Stage Cooling
-1st Stage Heating
-2nd Stage Heating
-Reheat Mode

- Fan Only: A (G) call from the thermostat to the (G) terminal of the DXM control board will bring the unit on in fan only mode.
- 1st Stage Cooling: A simultaneous call from (G), (Y1), and (O) to the (G), (Y1), (O/W2) terminals of the DXM control board will bring the unit on in 1st Stage Cooling.
- 2nd Stage Cooling: A simultaneous call from (G), (Y1), (Y2), and (O) to the (G), (Y1), (Y2), and (O/W2) terminals of the DXM control board will bring the unit on in 2nd Stage Cooling. When the call is satisfied at the thermostat the unit will continue to run in 1st Stage Cooling until the 1st Stage Cooling call is removed or satisfied, shutting down the unit. **NOTE: Not all units have two-stage cooling functionality.**

Table 2: Humidistat/Dehumidistat Logic and DXM (2.1, 2.2., 2.3) DIP Settings

Sensor	2.1	2.2	2.3	Logic	Reheat (ON) - H	Reheat (OFF) - H
Humidistat	OFF	OFF	OFF	Reverse	0 VAC	24 VAC
Dehumidistat	OFF	ON	OFF	Standard	24 VAC	0 VAC

Table 3: ClimaDry® II Operating Modes

Mode	Input					Output				
	O	G	Y1	Y2[3]	H	O	G	Y1	Y2[3]	Reheat
No Demand	ON/OFF	OFF	OFF	OFF	OFF	ON/OFF	OFF	OFF	OFF	OFF
Fan Only	ON/OFF	ON	OFF	OFF	OFF	ON/OFF	ON	OFF	OFF	OFF
Cooling 1st Stage	ON	ON	ON	OFF	OFF	ON	ON	ON	OFF	OFF
Cooling 2nd Stage	ON	ON	ON	ON	OFF	ON	ON	ON	ON	OFF
Cooling & Dehumidistat[1]	ON	ON	ON	ON/OFF	ON	ON	ON	ON	ON/OFF	OFF
Dehumidistat Only	ON/OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON
Heating 1st Stage	OFF	ON	ON	OFF	OFF	OFF	ON	ON	OFF	OFF
Heating 2nd Stage	OFF	ON	ON	ON	OFF	OFF	ON	ON	ON	OFF
Heating & Dehumidistat[2]	OFF	ON	ON	ON/OFF	ON	OFF	ON	ON	ON/OFF	OFF

[1]Cooling input takes priority over dehumidify input.
[2]DXM is programmed to ignore the H demand when the unit is in heating mode.
[3]N/A for single stage units; Full load operation for dual capacity units.
[4]ON/OFF = Either ON or OFF.

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ClimaDry® II Option – Sequence of Operation

- 1st Stage Heating: A simultaneous call from (G) and (Y1) to the (G) and (Y1) terminals of the DXM control board will bring the unit on in 1st Stage Heating.

- 2nd Stage Heating: A simultaneous call from (G), (Y1), and (Y2) to the (G), (Y1), and (Y2) terminals of the DXM control board will bring the unit on in 2nd Stage Heating. When the call is satisfied at the thermostat the unit will continue to run in 1st Stage Heating until the call is removed or satisfied, shutting down the unit. **NOTE: Not all units have two-stage heating functionality (e.g. TLV084-150 units).**

- Reheat Mode: A call from the Humidistat/ Dehumidistat to the (H) terminal of the DXM control board will bring the unit on in Reheat Mode if there is no call for cooling at the thermostat. When the Humidistat/Dehumidification call is removed or satisfied the unit will shut down. **NOTE: Cooling always overrides Reheat Mode. In the Cooling mode, the unit cools and dehumidifies. If the cooling thermostat is satisfied but there is still a call for dehumidification, the unit will continue to operate in Reheat Mode.**

- **Note: Care must be taken when using a humidistat to operate ClimaDry®. When the DIP switch on the DXM controller is set for 'humidistat' it reverses the control logic so that an "open" control circuit initiates a ClimaDry® run cycle. If a humidistat is not connected, or if a manual switch on the humidistat is set to "off", ClimaDry® will see the open circuit and call for dehumidification.**

ClimaDry® II Component Functions
The ClimaDry® II option consists of the following components:
- Motorized Valve/Proportional Controller
- Supply Air Sensor
- Loop Pump
- Hydronic Coil
- Low Air Temperature Switch

The Proportional Controller operates on 24 VAC power supply and automatically adjusts the water valve based upon the Supply Air Sensor. The Supply Air Sensor senses supply air temperature at the blower inlet providing the input signal necessary for the proportional control to drive the motorized valve during the reheat mode of operation. The Motorized Valve is a proportional actuator/three-way valve combination used to divert the condenser water from the coax to the hydronic reheat coil during the reheat mode of operation. The proportional controller signals the motorized valve based on the supply air temperature of the supply air sensor.

The Loop Pump circulates condenser water through the hydronic reheat coil during the reheat mode of operation. In this application, the loop pump is only energized during the reheat mode of operation. The Hydronic Coil is utilized during the reheat mode of operation to reheat the air to the setpoint of the proportional controller. Condenser water is diverted by the motorized valve and pumped through the hydronic coil by the loop pump in proportion to the control setpoint. The amount of reheating is dependent on the setpoint and how far from setpoint the supply air temperature is. The factory setpoint is 72°F [22°C], generally considered "neutral" air.

ClimaDry® II Application Considerations
The reheat coil adds a small amount of resistance to the air stream. In some cases the high static option may be required for applications with higher static ductwork. Consult the submittal data or the Installation/Operation/ Maintenance (I.O.M.) manual for the specific heat pump to review blower tables.

Unlike most hot gas reheat options, the ClimaDry® II option will operate over a wide range of EWTs. Special flow regulation (water regulating valve) is not required for low EWT conditions.

Unit minimum entering air temperature while in the dehumidification, cooling, or continuous fan modes is **65°F DB/55°F WB**. Operation below this minimum may result in nuisance faults.

Water-source heat pumps with ClimaDry® II should not be used as make-up air units. These applications should use equipment specifically designed for make-up air.

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Physical Data

TR Series	006	009	012	015	018	024	030	036	042	048	060
Compressor (1 each)	Rotary					Scroll					
Factory Charge HFC-410A - (oz.)	17	18.5	23	35	43	43	48	50	70	74	82
PSC Fan Motor & Blower											
Fan Motor Type/Speeds	PSC/3	PSC/3	PSC/3	PSC/3	PSC/3	PSC/3	PSC/3	PSC/3	PSC/3	PSC/3	PSC/3
Fan Motor (hp)	1/25	1/10	1/10	1/6	1/6	1/4	3/4	1/2	3/4	3/4	1
Blower Wheel Size (Dia x W)	5x5	5x5	6x5	8x7	8x7	9x7	9x7	9x8	9x8	10x10	11x10
Water Connection Size											
Source FPT	1/2”	1/2”	1/2”	1/2”	1/2”	3/4”	3/4”	3/4”	3/4”	1”	1”
Optional HWG FPT	1/2”										
Coax Volume (gallons)	0.123	0.143	0.167	0.286	0.45	0.286	0.323	0.323	0.89	0.738	0.939
Vertical											
Air Coil Dimensions (H x W)	10x15	10x15	10x15	20x17.25	20x17.25	20x17.25	20x17.25	24x21.75	24x21.76	28x25	28x25
Filter Standard - 1” Throwaway	10x18	10x18	10x18	20x20	20x20	20x20	20x20	24x24	24x24	28x28	28x28
Weight - Operating (lbs.)	110	112	121	163	168	184	192	213	228	283	298
Weight - Packaged (lbs.)	115	117	126	168	173	189	197	219	234	290	305
Horizontal											
Air Coil Dimensions (H x W)	10x15	10x15	10x15	16x22	16x22	16x22	16x22	20x25	20x25	20x35	20x35
Filter Standard - 1” Throwaway	10x18	10x18	10x18	16x25	16x25	18x25	18x25	20x28 or 2-20x14	20x28 or 2-20x14	1-20x24, 1-20x14	1-20x24, 1-20x14
Weight - Operating (lbs.)	110	112	121	163	168	184	192	213	228	283	298
Weight - Packaged (lbs.)	115	117	126	168	173	189	197	219	234	290	305

Notes: All units have TXV expansion device and 1/2” & 3/4” electrical knockouts.
575 volt fan motors are two speed.
FPT=Female Pipe Thread
Condensate Drain Connection is 3/4” FPT.
For ClimaDry® option add 66lbs (30kg).

Unit Maximum Water Working Pressure	
Options	**Max Pressure PSIG [kPa]**
Base Unit	300 [2,068]
Internal Secondary Pump (ISP)	145 [999]
Internal Motorized Water Valve (MWV)	300 [2,068]
Internal Auto Flow Valve	300 [2,068]
ClimaDry®	145 [999]

Use the lowest maximum pressure rating when multiple options are combined.

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TR - Horizontal – Dimensional Data

Horizontal Model		Overall Cabinet		
		A Width	B Length	C Height
006 - 012	in	22.5	40.3	11.5
	cm	57.2	102.4	29.2
015 - 018	in	22.4	48.3	17.5
	cm	56.9	122.7	44.5
024 - 030	in	22.4	48.3	18.3
	cm	56.9	122.7	46.5
036 - 042	in	22.4	53.1	21.3
	cm	56.9	134.9	54.1
048 - 060	in	25.4	68.0	21.3
	cm	64.5	172.7	54.1

Horizontal Model		Electrical Knockouts		
		H 1/2"	J 1/2"	K 3/4"
		Low Voltage	Low Voltage	Power Supply
006 - 012	in	2.9	5.9	8.9
	cm	7.4	15.0	22.6
015 - 060	in	4.0	7.0	10.0
	cm	4.0	18.8	25.4

Horizontal Model		Water Connections										
		①		②		③		④		⑤		
		Loop In D	Loop In E	Loop Out F	Loop Out E	Cond. 3/4" FPT		HWG In 1/2" FPT		HWG Out 1/2" FPT		Loop In/Out FPT
						AA	BB	DD	EE	FF	EE	
006 - 012	in	3.8	1.5	8.6	1.5	3.3	0.7	Not Available				1/2"
	cm	9.7	3.8	21.8	3.8	8.4	1.8					
015 - 018	in	3.7	1.9	9.7	1.9	3.3	0.7	11.7	1.6	14.9	1.6	1/2"
	cm	9.4	4.8	24.6	4.8	8.4	1.8	29.7	4.1	37.8	4.1	
024 - 030	in	3.7	1.9	9.7	1.9	3.3	0.7	12.4	1.6	15.7	1.6	3/4"
	cm	9.4	4.8	24.6	4.8	8.4	1.8	31.5	4.1	39.9	4.1	
036 - 042	in	3.7	1.8	12.7	1.8	3.3	0.7	15.2	1.6	18.4	1.6	3/4"
	cm	9.4	4.6	32.3	4.6	8.4	1.8	38.6	4.1	46.7	4.1	
048 - 060	in	3.7	1.8	12.7	1.8	3.3	0.7	15.2	1.6	18.4	1.6	1"
	cm	9.4	4.6	32.3	4.6	8.4	1.8	38.6	4.1	46.7	4.1	

Horizontal Model		Discharge Connection Duct Flange Installed (+/- 0.10 in, +/- 2.5mm)					Return Connection Using Return Air Opening			
		L	M Supply Height	N Supply Width	O	P	Q Return Width	R Return Height	S	T
006 - 012	in	1.3	8.9	6.7	7.4	1.3	16.1	9.5	1.1	1.0
	cm	3.3	22.6	17.0	18.8	3.3	40.9	24.1	2.8	2.5
015 - 018	in	1.2	13.1	9.7	3.9	3.2	22.9	15.5	0.8	1.0
	cm	3.0	33.3	24.6	9.9	8.1	58.2	39.4	2.0	2.5
024 - 030	in	1.2	13.1	9.7	3.9	4.0	22.9	16.3	0.8	1.0
	cm	3.0	33.3	24.6	9.9	10.2	58.2	41.4	2.0	2.5
036 - 042	in	2.4	16.1	11.0	2.9	2.7	26.1	19.3	0.8	1.0
	cm	6.1	40.9	27.9	7.4	6.9	66.3	49.0	2.0	2.5
048 - 060	in	1.2	16.1	13.6	4.0	4.0	35.0	19.3	1.3	1.0
	cm	3.0	40.9	34.5	10.2	10.2	88.9	49.0	3.4	2.5

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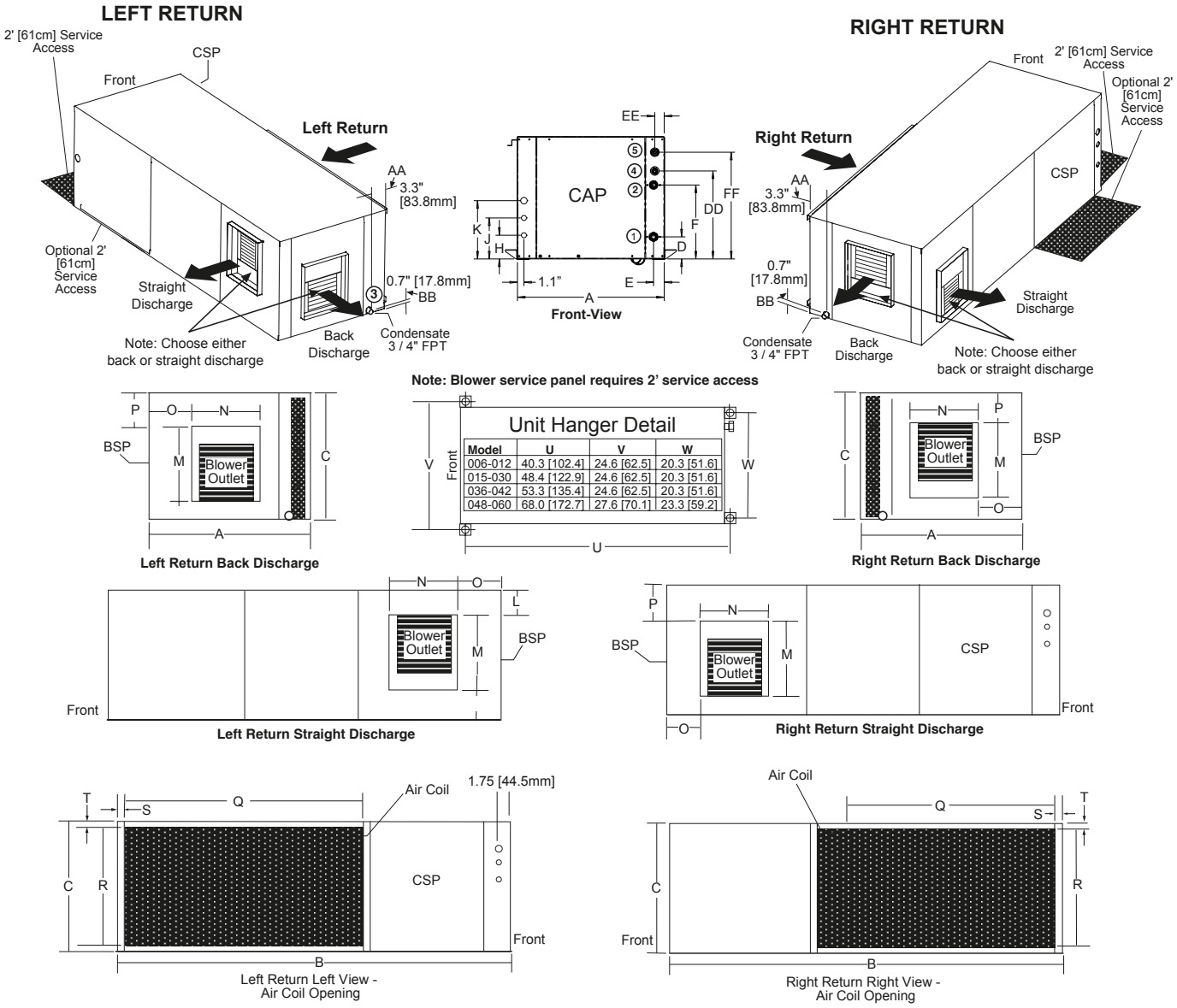
TR - Horizontal – Dimensional Data



Notes:

1. While clear access to all removable panels is not required, installer should take care to comply with all building codes and allow adequate clearance for future field service.
2. Units shipped with filter rails. These rails should be removed for return duct connection. See Aff---- for accessory air filter frame with duct collar.
3. Discharge flange and hanger brackets are factory installed.
4. Condensate is 3/4" FPT.
5. Blower service panel requires 2' service access.
6. Blower service access is through back panel on straight discharge units or through panel opposite air coil on back discharge units.
7. Water connections for optional hot water generator are 1/2" FPT.

Legend:
CAP = Control Access Panel
BSP = Blower Service Panel
CSP = Compressor Access Panel

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TR - Vertical Upflow – Dimensional Data

Vertical Upflow Model		Overall Cabinet A Width	B Depth	C Height
006 - 012	in	22.5	21.3	22.5
	cm	57.2	54.1	57.2
015 - 030	in	22.4	22.4	40.5
	cm	56.9	56.9	102.9
036 - 042	in	22.4	25.4	46.5
	cm	56.9	64.5	118.1
048 - 060	in	25.4	29.1	50.5
	cm	64.5	73.9	128.3

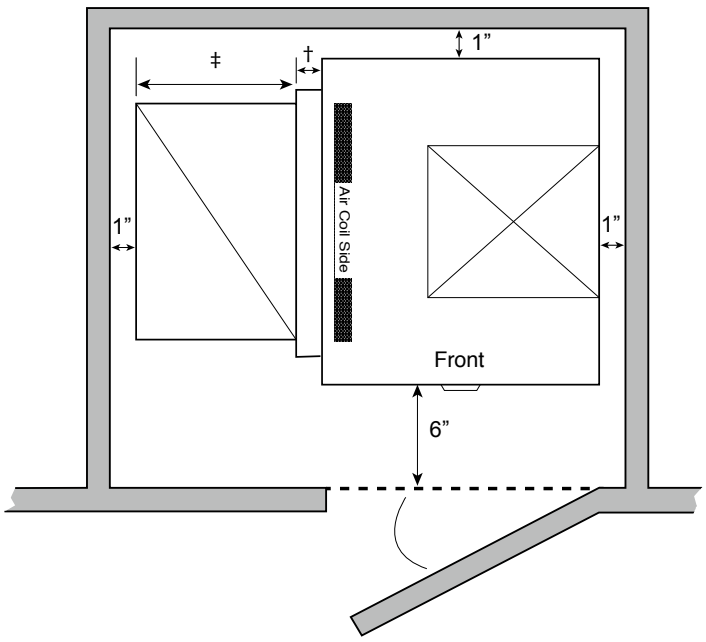
Vertical Model		Electrical Knockouts J 1/2" Low Voltage	K 1/2" Low Voltage	L 3/4" Power Supply
006 - 012	in	2.9	5.9	8.1
	cm	7.4	15.0	20.6
015 - 060	in	4.0	7.0	10.0
	cm	10.2	17.8	25.4

Vertical Upflow Model		Water Connections - Standard Units ① Loop In D	Loop In E	② Loop Out F	Loop Out E	③ Cond. 3/4" FPT H	I	④ HWG In 1/2" FPT DD	EE	⑤ HWG In 1/2" FPT FF	EE	Loop In/ Out FPT
006 - 012	in	3.8	1.5	8.7	1.5	6.1	1.5	Not Available				1/2"
	cm	9.7	3.8	22.1	3.8	15.5	3.8					
015 - 018	in	3.7	1.9	9.7	1.9	7.0	1.9	11.7	1.6	14.9	1.6	1/2"
	cm	9.4	4.8	24.6	4.8	17.8	4.8	29.7	4.1	37.8	4.1	
024 - 030	in	3.7	1.9	9.7	1.9	7.0	1.9	12.4	1.6	15.7	1.6	3/4"
	cm	9.4	4.8	24.6	4.8	17.8	4.8	31.5	4.1	39.9	4.1	
036 - 042	in	3.7	1.8	12.7	1.8	8.0	1.8	15.2	1.6	18.4	1.6	3/4"
	cm	9.4	4.6	32.3	4.6	20.3	4.6	38.6	4.1	46.7	4.1	
048 - 060	in	3.7	1.8	12.7	1.8	8.0	1.8	15.2	1.6	18.4	1.6	1"
	cm	9.4	4.6	32.3	4.6	20.3	4.6	38.6	4.1	46.7	4.1	

Vertical Model		Discharge Connection Duct Flange Installed (+/- 0.10 in, +/- 2.5mm) M	N	O Supply Width	P Supply Depth	Q	Return Connection Using Return Air Opening R	S Return Depth	T Return Height	U
006 - 012	in	6.2	6.2	9.0	9.0	5.3	2.4	16.0	10.2	1.0
	cm	15.7	15.7	22.9	22.9	13.5	6.1	40.6	25.9	2.5
015 - 030	in	7.2	4.2	14.0	14.0	6.7	2.2	18.4	20.3	1.1
	cm	18.3	10.7	35.6	35.6	17.0	5.6	46.7	51.6	2.8
036 - 042	in	7.2	6.0	14.0	14.0	6.5	2.1	22.9	24.3	1.1
	cm	18.3	15.2	35.6	35.6	16.5	5.3	58.2	61.7	2.8
048 - 060	in	8.2	5.7	16.0	18.0	7.3	2.1	26.2	28.3	1.1
	cm	20.8	14.5	40.6	45.7	18.5	5.3	66.5	71.9	2.8

Recommended Minimum Installation Clearances for Vertical Units*	
1"	Back of unit
	Side opposite return air
6"	Front if hard piped
Return Air Side	
1"	Ducted return - ‡ Add for duct width - † Add 2" for 1" filter frame/rail or 3" for 2" filter frame/rail
	Free (open) return - calculate required dimension for a maximum velocity of 600 fpm

*Field installed accessories (hoses, air cleaners, etc.) may require additional space.



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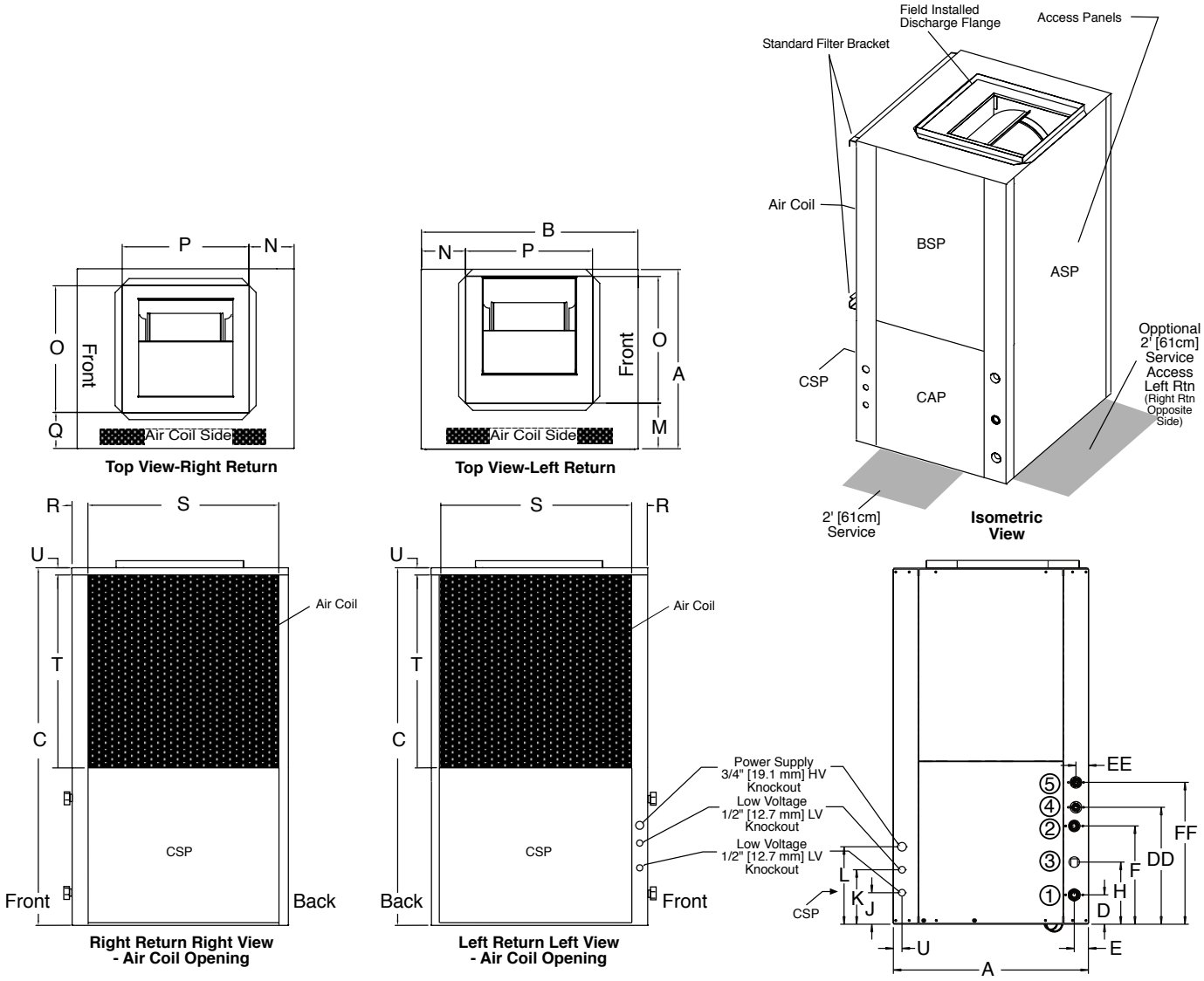
TR - Vertical Upflow – Dimensional Data



Notes:
1. While clear access to all removable panels is not required, installer should take care to comply with all building codes and allow adequate clearance for future field service.
2. Front & Side access is preferred for service access. However, all components may be serviced from the front access panel if side access is not available.
3. Discharge flange is field installed.
4. Condensate is 3/4" FPT.
5. Water connections for optional hot water generator are 1/2" FPT.
6. Units shipped with filter rails. These rails should be removed for return duct connection. See Aff---- for accessory air filter frame with duct collar.

Legend:
CAP = Control Access Panel
BSP = Blower Service Panel
CSP = Compressor Access Panel
ASP = Alternative Service Panel

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Corner Weights for TRH Series Units

Model		Total	Left-Front*	Right-Front*	Left-Back*	Right-Back*
TRH006	Lbs	110	40	20	25	25
	kg	50	18	9	11	11
TRH009	Lbs	112	41	21	25	25
	kg	51	19	10	11	11
TRH012	Lbs	121	45	22	27	27
	kg	55	20	10	12	12
TRH015	Lbs	163	54	44	33	33
	kg	74	24	20	15	15
TRH018	Lbs	168	55	45	34	34
	kg	76	25	20	15	15
TRH024	Lbs	184	61	50	37	37
	kg	83	28	23	17	17
TRH030	Lbs	192	63	52	38	38
	kg	87	29	24	17	17
TRH036	Lbs	213	70	58	43	43
	kg	97	32	26	20	20
TRH042	Lbs	228	75	62	46	46
	kg	103	34	28	21	21
TRH048	Lbs.	283	93	76	57	57
	kg	128	42	34	26	26
TRH060	Lbs.	298	98	80	60	60
	kg	135	44	36	27	27

*Front is control box end.

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Electrical Data – Standard Unit

TR Model	Voltage Code	Rated Voltage	Voltage Min/Max	Compressor			Fan Motor FLA	Total Unit FLA	Min Circuit Amp	Max Fuse/ HACR
				QTY	RLA	LRA				
006	G	208-230/60/1	197/254	1	3.3	17.7	0.40	3.7	4.5	15
	E	265/60/1	239/292	1	2.9	13.5	0.40	3.3	4.0	15
009	G	208-230/60/1	197/254	1	4.5	22.2	0.92	5.4	6.5	15
	E	265/60/1	239/292	1	3.8	18.8	0.70	4.5	5.5	15
012	G	208-230/60/1	197/254	1	5.1	32.5	0.92	6.0	7.3	15
	E	265/60/1	239/292	1	4.0	31.5	0.70	4.7	5.7	15
015	G	208-230/60/1	197/254	1	6.0	29.0	1.20	7.2	8.7	15
	E	265/60/1	239/292	1	5.4	28.0	0.86	6.8	8.2	15
018	G	208-230/60/1	197/254	1	7.2	33.0	1.20	8.4	10.2	15
	E	265/60/1	239/292	1	5.9	28.0	0.86	6.8	8.2	15
024	G	208-230/60/1	197/254	1	12.8	58.3	1.50	14.3	17.5	30
	E	265/60/1	239/292	1	9.6	54.0	1.30	10.9	13.3	20
	H	208-230/60/3	197/254	1	7.7	55.4	1.50	9.2	11.1	15
	F	460/60/3	414/506	1	3.6	28.0	0.76	4.4	5.3	15
030	G	208-230/60/1	197/254	1	14.1	73.0	3.00	17.1	20.6	30
	E	265/60/1	239/292	1	11.2	60.0	2.70	13.9	16.7	25
	H	208-230/60/3	197/254	1	8.9	58.0	3.00	11.9	14.1	20
	F	460/60/3	414/506	1	4.2	28.0	1.70	5.9	7.0	15
036	G	208-230/60/1	197/254	1	16.7	79.0	1.80	18.5	22.7	35
	E	265/60/1	239/292	1	13.5	72.0	2.00	15.5	18.9	30
	H	208-230/60/3	197/254	1	10.4	73.0	1.80	12.2	14.8	25
	F	460/60/3	414/506	1	5.8	38.0	1.24	7.0	8.5	15
042	G	208-230/60/1	197/254	1	17.9	112.0	3.00	20.9	25.4	40
	H	208-230/60/3	197/254	1	13.5	88.0	3.00	16.5	19.9	30
	F	460/60/3	414/506	1	6.0	44.0	1.70	7.7	9.2	15
	N	575/60/3	518/633	1	4.9	34.0	1.40	6.3	7.5	15
048	G	208-230/60/1	197/254	1	21.8	117.0	3.40	25.2	30.7	50
	H	208-230/60/3	197/254	1	13.7	83.1	3.40	17.1	20.5	30
	F	460/60/3	414/506	1	6.2	41.0	1.80	8.0	9.6	15
	N	575/60/3	518/633	1	4.8	33.0	1.40	6.2	7.4	15
060	G	208-230/60/1	197/254	1	26.3	134.0	4.90	31.2	37.8	60
	H	208-230/60/3	197/254	1	15.6	110.0	4.90	20.5	24.4	40
	F	460/60/3	414/506	1	7.8	52.0	2.50	10.3	12.3	20
	N	575/60/3	518/633	1	5.8	38.9	1.90	7.7	9.2	15

HACR circuit breaker in USA only
All fuses Class RK-5

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Electrical Data – High Static Blower

TR Model	Voltage Code	Rated Voltage	Voltage Min/Max	Compressor			Fan Motor FLA	Total Unit FLA	Min Circuit Amp	Max Fuse/ HACR
				QTY	RLA	LRA				
015	G	208-230/60/1	197/254	1	6.0	29.0	1.20	7.2	8.7	15
	E	265/60/1	239/292	1	5.4	28.0	0.86	6.3	7.6	15
018	G	208-230/60/1	197/254	1	7.2	33.0	1.50	8.7	10.5	15
	E	265/60/1	239/292	1	5.9	28.0	1.30	7.2	8.7	15
024	G	208-230/60/1	197/254	1	12.8	58.3	1.50	14.3	17.5	30
	E	265/60/1	239/292	1	9.6	54.0	1.30	10.9	13.3	20
	H	208-230/60/3	197/254	1	7.7	55.4	1.50	9.2	11.1	15
	F	460/60/3	414/506	1	3.6	28.0	0.76	4.4	5.3	15
030	G	208-230/60/1	197/254	1	14.1	73.0	3.00	17.1	20.6	30
	E	265/60/1	239/292	1	11.2	60.0	2.70	13.9	16.7	25
	H	208-230/60/3	197/254	1	8.9	58.0	3.00	11.9	14.1	20
	F	460/60/3	414/506	1	4.2	28.0	1.70	5.9	7.0	15
036	G	208-230/60/1	197/254	1	16.7	79.0	3.00	19.7	23.9	40
	E	265/60/1	239/292	1	13.5	72.0	2.70	16.2	19.6	30
	H	208-230/60/3	197/254	1	10.4	73.0	3.00	13.4	16.0	25
	F	460/60/3	414/506	1	5.8	38.0	1.70	7.5	9.0	15
042	G	208-230/60/1	197/254	1	17.9	112.0	3.00	20.9	25.4	40
	H	208-230/60/3	197/254	1	13.5	88.0	3.00	16.5	19.9	30
	F	460/60/3	414/506	1	6.0	44.0	1.70	7.7	9.2	15
	N	575/60/3	518/633	1	4.9	34.0	1.40	6.3	7.5	15
048	G	208-230/60/1	197/254	1	21.8	117.0	4.90	26.7	32.2	50
	H	208-230/60/3	197/254	1	13.7	83.1	4.90	18.6	22.0	35
	F	460/60/3	414/506	1	6.2	41.0	2.50	8.7	10.3	15
	N	575/60/3	518/633	1	4.8	33.0	1.90	6.7	7.9	15
060	G	208-230/60/1	197/254	1	26.3	134.0	5.80	32.1	38.7	60
	H	208-230/60/3	197/254	1	15.6	110.0	5.80	21.4	25.3	40
	F	460/60/3	414/506	1	7.8	52.0	2.60	10.4	12.4	20
	N	575/60/3	518/633	1	5.8	38.9	2.30	8.1	9.6	15

HACR circuit breaker in USA only
All fuses Class RK-5

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Electrical Data – Internal Secondary Pump

TR Model	Voltage Code	Rated Voltage	Voltage Min/Max	Compressor			Fan Motor FLA	Total Unit FLA	Pump FLA	Min Circuit Amp	Max Fuse/ HACR
				QTY	RLA	LRA					
006	G	208-230/60/1	197/254	1	3.3	17.7	0.40	4.1	0.4	4.9	15
	E	265/60/1	239/292	1	2.9	13.5	0.40	4.0	0.7	4.7	15
009	G	208-230/60/1	197/254	1	4.5	22.2	0.92	5.8	0.4	7.0	15
	E	265/60/1	239/292	1	3.8	18.8	0.70	5.2	0.7	6.2	15
012	G	208-230/60/1	197/254	1	5.1	32.5	0.92	6.8	0.8	8.1	15
	E	265/60/1	239/292	1	4.0	31.5	0.70	5.4	0.7	6.4	15
015	G	208-230/60/1	197/254	1	6.0	29.0	1.20	7.6	0.4	9.1	15
	E	265/60/1	239/292	1	5.4	28.0	0.86	7.0	0.7	8.3	15
018	G	208-230/60/1	197/254	1	7.2	33.0	1.20	9.2	0.8	11.0	15
	E	265/60/1	239/292	1	5.9	28.0	0.86	7.5	0.7	8.9	15
024	G	208-230/60/1	197/254	1	12.8	58.3	1.50	15.1	0.8	18.3	30
	E	265/60/1	239/292	1	9.6	54.0	1.30	11.6	0.7	14.0	20
	H	208-230/60/3	197/254	1	7.7	55.4	1.50	10.0	0.8	11.9	15
	*F	*460/60/3	414/506	1	3.6	28.0	0.76	5.1	0.7	6.0	15
030	G	208-230/60/1	197/254	1	14.1	73.0	3.00	17.9	0.8	21.4	35
	E	265/60/1	239/292	1	11.2	60.0	2.70	14.6	0.7	17.4	25
	H	208-230/60/3	197/254	1	8.9	58.0	3.00	12.7	0.8	14.9	20
	*F	*460/60/3	414/506	1	4.2	28.0	1.70	6.6	0.7	7.7	15
036	G	208-230/60/1	197/254	1	16.7	79.0	1.80	19.3	0.8	23.5	40
	E	265/60/1	239/292	1	13.5	72.0	2.00	16.2	0.7	19.6	30
	H	208-230/60/3	197/254	1	10.4	73.0	1.80	13.0	0.8	15.6	25
	*F	*460/60/3	414/506	1	5.8	38.0	1.24	7.7	0.7	9.2	15
042	G	208-230/60/1	197/254	1	17.9	112.0	3.00	21.7	0.8	26.2	40
	H	208-230/60/3	197/254	1	13.5	88.0	3.00	17.3	0.8	20.7	30
	*F	*460/60/3	414/506	1	6.0	44.0	1.70	8.4	0.7	9.9	15
048	G	208-230/60/1	197/254	1	21.8	117.0	3.40	26.3	1.1	31.7	50
	H	208-230/60/3	197/254	1	13.7	83.1	3.40	18.2	1.1	21.6	35
	*F	*460/60/3	414/506	1	6.2	41.0	1.80	9.1	1.1	10.6	15
060	G	208-230/60/1	197/254	1	26.3	134.0	4.90	32.3	1.1	38.8	60
	H	208-230/60/3	197/254	1	15.6	110.0	4.90	21.6	1.1	25.5	40
	*F	*460/60/3	414/506	1	7.8	52.0	2.50	11.4	1.1	13.3	20

* NEUTRAL CONNECTION REQUIRED! All F Voltage (460 vac) units with internal secondary circulators require a four wire power supply with neutral. Internal secondary circulators are rated 265 vac and are wired between one hot leg and neutral.

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Electrical Data – High Static with Internal Secondary Pump

TR Model	Voltage Code	Rated Voltage	Voltage Min/Max	Compressor			Fan Motor FLA	Total Unit FLA	Pump FLA	Min Circuit Amp	Max Fuse/ HACR
				QTY	RLA	LRA					
015	G	208-230/60/1	197/254	1	6.0	29.0	1.20	7.6	0.4	8.9	15
	E	265/60/1	239/292	1	5.4	28.0	0.86	7.0	0.7	8.3	15
018	G	208-230/60/1	197/254	1	7.2	33.0	1.50	9.5	0.8	11.3	15
	E	265/60/1	239/292	1	5.9	28.0	1.30	7.9	0.7	9.4	15
024	G	208-230/60/1	197/254	1	12.8	58.3	1.50	15.1	0.8	18.3	30
	E	265/60/1	239/292	1	9.6	54.0	1.30	11.6	0.7	14.0	20
	H	208-230/60/3	197/254	1	7.7	55.4	1.50	10.0	0.8	11.9	15
	*F	*460/60/3	414/506	1	3.6	28.0	0.76	5.1	0.7	6.0	15
030	G	208-230/60/1	197/254	1	14.1	73.0	3.00	17.9	0.8	21.4	35
	E	265/60/1	239/292	1	11.2	60.0	2.70	14.6	0.7	17.4	25
	H	208-230/60/3	197/254	1	8.9	58.0	3.00	12.7	0.8	14.9	20
	*F	*460/60/3	414/506	1	4.2	28.0	1.70	6.6	0.7	7.7	15
036	G	208-230/60/1	197/254	1	16.7	79.0	3.00	20.5	0.8	24.7	40
	E	265/60/1	239/292	1	13.5	72.0	2.70	16.9	0.7	20.3	30
	H	208-230/60/3	197/254	1	10.4	73.0	3.00	14.2	0.8	16.8	25
	*F	*460/60/3	414/506	1	5.8	38.0	1.70	8.2	0.7	9.7	15
042	G	208-230/60/1	197/254	1	17.9	112.0	3.00	21.7	0.8	26.2	40
	H	208-230/60/3	197/254	1	13.5	88.0	3.00	17.3	0.8	20.7	30
	*F	*460/60/3	414/506	1	6.0	44.0	1.70	8.4	0.7	9.9	15
048	G	208-230/60/1	197/254	1	21.8	117.0	4.90	27.8	1.1	33.2	50
	H	208-230/60/3	197/254	1	13.7	83.1	4.90	19.7	1.1	23.1	35
	*F	*460/60/3	414/506	1	6.2	41.0	2.50	9.8	1.1	11.3	15
060	G	208-230/60/1	197/254	1	26.3	134.0	5.80	33.2	1.1	39.7	60
	H	208-230/60/3	197/254	1	15.6	110.0	5.80	22.5	1.1	26.4	40
	*F	* 460/60/3	414/506	1	7.8	52.0	2.60	11.5	1.1	13.4	20

* NEUTRAL CONNECTION REQUIRED! All F Voltage (460 vac) units with internal secondary circulators require a four wire power supply with neutral. Internal secondary circulators are rated 265 vac and are wired between one hot leg and neutral.

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Electrical Data with ClimaDry®

TR Model	Voltage Code	Rated Voltage	Voltage Min/Max	Compressor			Fan Motor FLA	Total Unit FLA	Pump FLA	Min Circuit Amp	Max Fuse/ HACR
				QTY	RLA	LRA					
024	G	208-230/60/1	197/254	1	12.8	58.3	1.50	15.1	0.8	18.3	30
	E	265/60/1	239/292	1	9.6	54.0	1.30	11.6	0.7	14.0	20
	H	208-230/60/3	197/254	1	7.7	55.4	1.50	10.0	0.8	11.9	15
	*F	*460/60/3	414/506	1	3.6	28.0	0.76	5.1	0.7	6.0	15
030	G	208-230/60/1	197/254	1	14.1	73.0	3.00	17.9	0.8	21.4	35
	E	265/60/1	239/292	1	11.2	60.0	2.70	14.6	0.7	17.4	25
	H	208-230/60/3	197/254	1	8.9	58.0	3.00	12.7	0.8	14.9	20
	*F	*460/60/3	414/506	1	4.2	28.0	1.70	6.6	0.7	7.7	15
036	G	208-230/60/1	197/254	1	16.7	79.0	1.80	19.3	0.8	23.5	40
	E	265/60/1	239/292	1	13.5	72.0	2.00	16.2	0.7	19.6	30
	H	208-230/60/3	197/254	1	10.4	73.0	1.80	13.0	0.8	15.6	25
	*F	*460/60/3	414/506	1	5.8	38.0	1.24	7.7	0.7	9.2	15
042	G	208-230/60/1	197/254	1	17.9	112.0	3.00	21.7	0.8	26.2	40
	H	208-230/60/3	197/254	1	13.5	88.0	3.00	17.3	0.8	20.7	30
	*F	*460/60/3	414/506	1	6.0	44.0	1.70	8.4	0.7	9.9	15
048	G	208-230/60/1	197/254	1	21.8	117.0	3.40	26.3	1.1	31.7	50
	H	208-230/60/3	197/254	1	13.7	83.1	3.40	18.2	1.1	21.6	35
	*F	*460/60/3	414/506	1	6.2	41.0	1.80	9.1	1.1	10.6	15
060	G	208-230/60/1	197/254	1	26.3	134.0	4.90	32.3	1.1	38.8	60
	H	208-230/60/3	197/254	1	15.6	110.0	4.90	21.6	1.1	25.5	40
	*F	*460/60/3	414/506	1	7.8	52.0	2.50	11.4	1.1	13.3	20

* NEUTRAL CONNECTION REQUIRED! All F Voltage (460 vac) units with ClimaDry® require a four wire power supply with neutral. ClimaDry® circulators are rated 265 vac and are wired between one hot leg and neutral.

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Electrical Data – ClimaDry® & High Static Fan

TR Model	Voltage Code	Rated Voltage	Voltage Min/Max	Compressor			Fan Motor FLA	Total Unit FLA	Pump FLA	Min Circuit Amp	Max Fuse/ HACR
				QTY	RLA	LRA					
024	G	208-230/60/1	197/254	1	12.8	58.3	1.50	15.1	0.8	18.3	30
	E	265/60/1	239/292	1	9.6	54.0	1.30	11.6	0.7	14.0	20
	H	208-230/60/3	197/254	1	7.7	55.4	1.50	10.0	0.8	11.9	15
	*F	*460/60/3	414/506	1	3.6	28.0	0.76	5.1	0.7	6.0	15
030	G	208-230/60/1	197/254	1	14.1	73.0	3.00	17.9	0.8	21.4	35
	E	265/60/1	239/292	1	11.2	60.0	2.70	14.6	0.7	17.4	25
	H	208-230/60/3	197/254	1	8.9	58.0	3.00	12.7	0.8	14.9	20
	*F	*460/60/3	414/506	1	4.2	28.0	1.70	6.6	0.7	7.7	15
036	G	208-230/60/1	197/254	1	16.7	79.0	3.00	20.5	0.8	24.7	40
	E	265/60/1	239/292	1	13.5	72.0	2.70	16.9	0.7	20.3	30
	H	208-230/60/3	197/254	1	10.4	73.0	3.00	14.2	0.8	16.8	25
	*F	*460/60/3	414/506	1	5.8	38.0	1.70	8.2	0.7	9.7	15
042	G	208-230/60/1	197/254	1	17.9	112.0	3.00	21.7	0.8	26.2	40
	H	208-230/60/3	197/254	1	13.5	88.0	3.00	17.3	0.8	20.7	30
	*F	*460/60/3	414/506	1	6.0	44.0	1.70	8.4	0.7	9.9	15
048	G	208-230/60/1	197/254	1	21.8	117.0	4.90	27.8	1.1	33.2	50
	H	208-230/60/3	197/254	1	13.7	83.1	4.90	19.7	1.1	23.1	35
	*F	*460/60/3	414/506	1	6.2	41.0	2.50	9.8	1.1	11.3	15
060	G	208-230/60/1	197/254	1	26.3	134.0	5.80	33.2	1.1	39.7	60
	H	208-230/60/3	197/254	1	15.6	110.0	5.80	22.5	1.1	26.4	40
	*F	*460/60/3	414/506	1	7.8	52.0	2.60	11.5	1.1	13.4	20

* NEUTRAL CONNECTION REQUIRED! All F Voltage (460 vac) units with ClimaDry® require a four wire power supply with neutral. ClimaDry® circulators are rated 265 vac and are wired between one hot leg and neutral.

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TR Series Wiring Diagram Matrix

Model	Wiring Diagram Part Number	Electrical	Control	DDC	Agency
TR Series Single Phase	96B0006N01	208-230/60/1, 265/60/1	CXM	-	ETL
	96B0006N03			LON	
	96B0006N09			MPC	
	96B0006N02		DXM	-	
	96B0006N04			LON	
	96B0006N10			MPC	
	96B0104N05			ClimaDry®	
TR Series Three Phase (230V Style)	96B0007N01	208-230/60/3	CXM	-	
	96B0007N03			LON	
	96B0007N06			MPC	
	96B0007N02		DXM	-	
	96B0007N04			LON	
	96B0007N07			MPC	
TR Series Three Phase (460V Style)	96B0008N01	460/60/3, 575/60/3	CXM	-	
	96B0008N03			LON	
	96B0008N08			MPC	
	96B0008N02		DXM	-	
	96B0008N04			LON	
	96B0008N09			MPC	

Representative diagrams are included in this submittal, all others are available at climatemaster.com.

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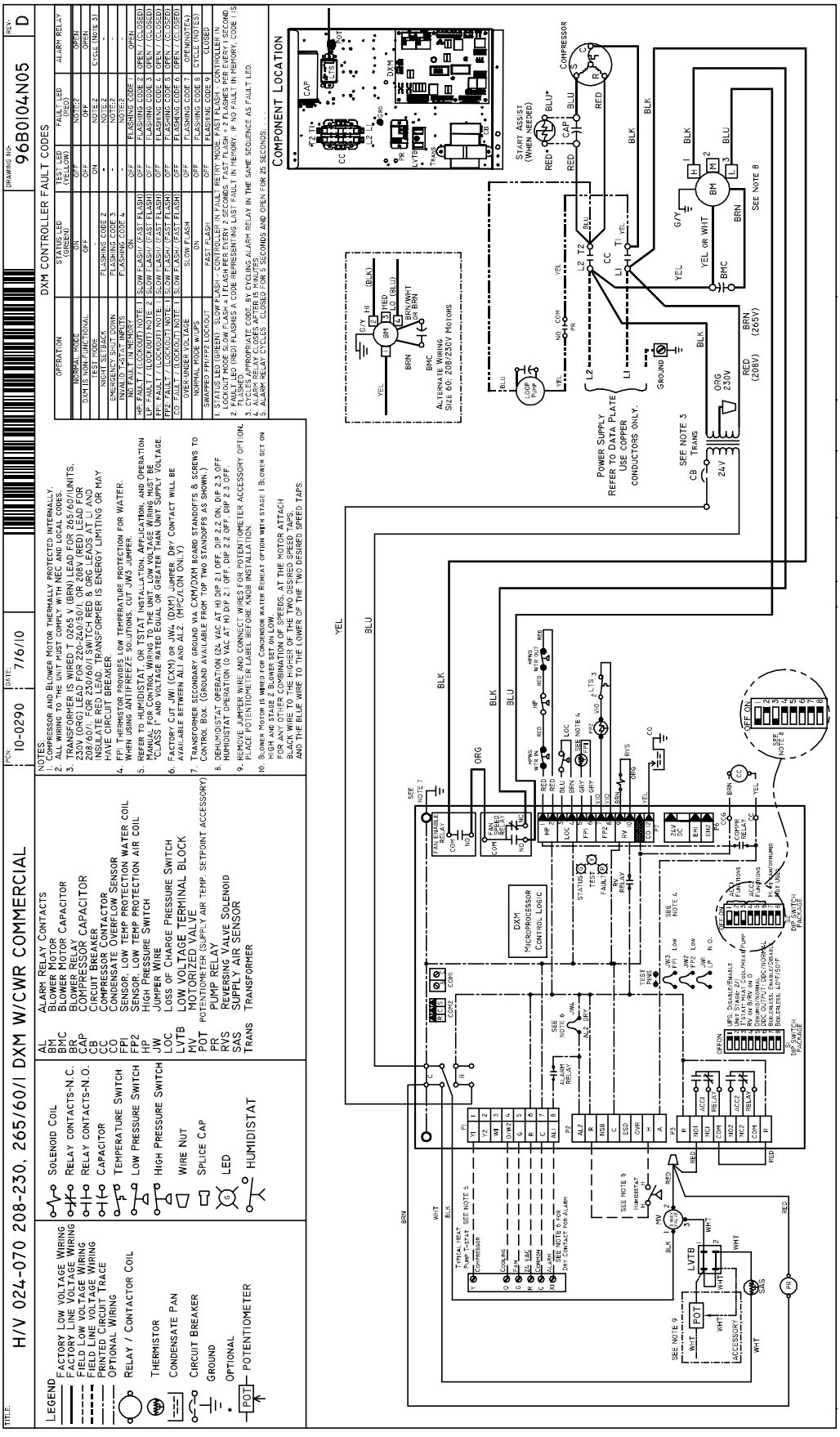
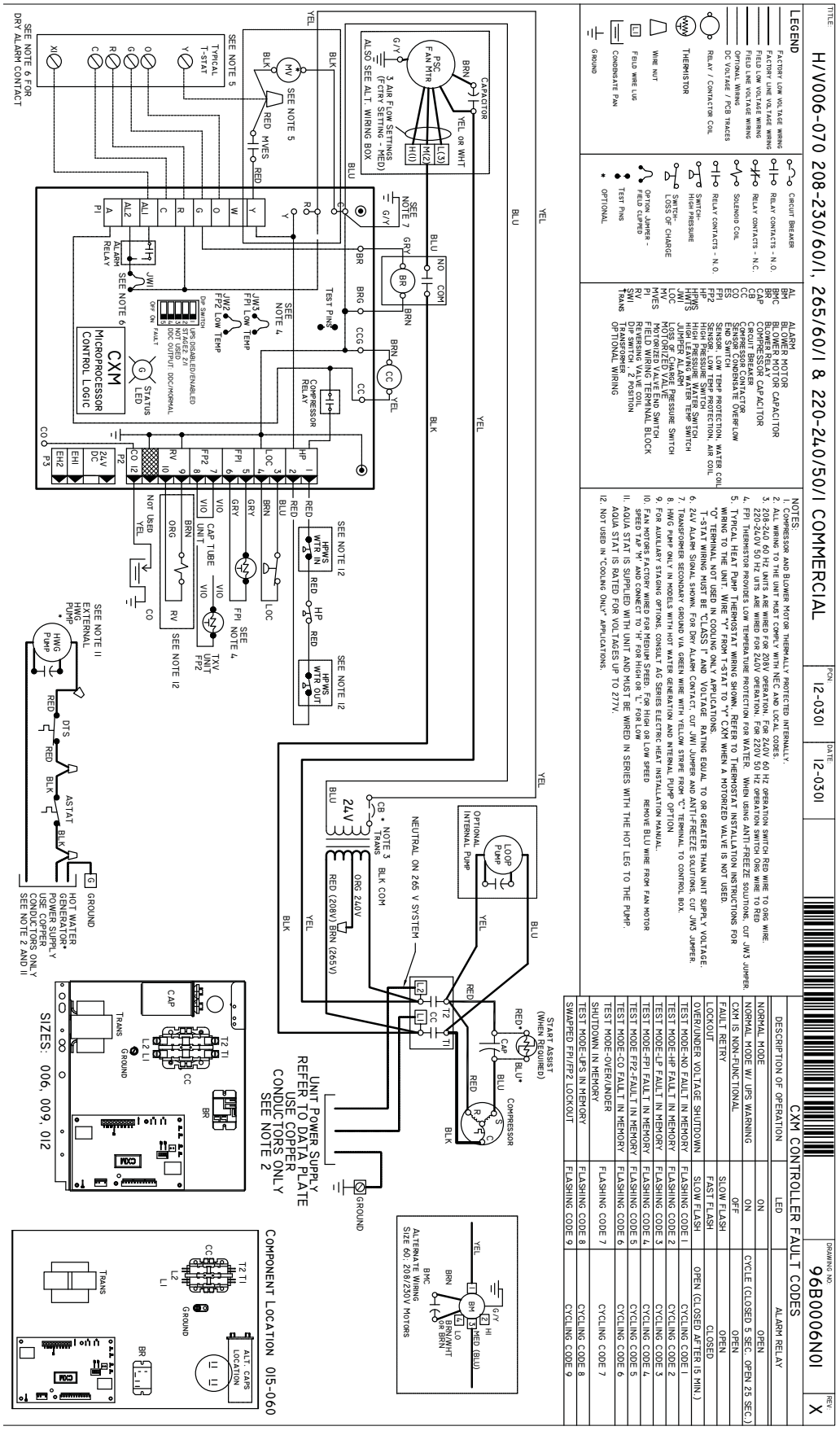
Typical Wiring Diagram – Single Phase TR with ClimaDry®


TITLE: H/V 024-070 208-230, 265/60/1 DXM W/CWR COMMERCIAL
PCN: 10-0290
DATE: 7/6/10
DRAWING NO: 96B0104N05
REV: D
LEGEND
FACTORY LOW VOLTAGE WIRING
FACTORY LINE VOLTAGE WIRING
FIELD LOW VOLTAGE WIRING
FIELD LINE VOLTAGE WIRING
PRINTED CIRCUIT TRACE
OPTIONAL WIRING
RELAY / CONTACTOR COIL
THERMISTOR
CONDENSATE PAN
CIRCUIT BREAKER
GROUND
OPTIONAL
POTENTIOMETER
SOLENOID COIL
RELAY CONTACTS-N.C.
RELAY CONTACTS-N.O.
CAPACITOR
TEMPERATURE SWITCH
LOW PRESSURE SWITCH
HIGH PRESSURE SWITCH
WIRE NUT
SPLICE CAP
LED
HUMIDISTAT
AL ALARM RELAY CONTACTS
BM BLOWER MOTOR
BMC BLOWER MOTOR CAPACITOR
BR BLOWER RELAY
CAP COMPRESSOR CAPACITOR
CB CIRCUIT BREAKER
CC COMPRESSOR CONTACTOR
CO CONDENSATE OVERFLOW SENSOR
FPI SENSOR, LOW TEMP PROTECTION WATER COIL
FP2 SENSOR, LOW TEMP PROTECTION AIR COIL
HP HIGH PRESSURE SWITCH
JW JUMPER WIRE
LOC LOSS OF CHARGE PRESSURE SWITCH
LVTB LOW VOLTAGE TERMINAL BLOCK
MV MOTORIZED VALVE
POT POTENTIOMETER (SUPPLY AIR TEMP. SETPOINT ACCESSORY)
PR PUMP RELAY
RVS REVERSING VALVE SOLENOID
SAS SUPPLY AIR SENSOR
TRANS TRANSFORMER
NOTES
1. COMPRESSOR AND BLOWER MOTOR THERMALLY PROTECTED INTERNALLY.
2. ALL WIRING MUST COMPLY WITH NEC AND LOCAL CODES.
3. TRANSFORMER IS WIRED T 0265 V (BRN) LEAD FOR 265/60/1UNITS, 230V (ORG) LEAD FOR 220-240/50/1, OR 208V (RED) LEAD FOR 208/60/1. FOR 230/60/1 SWITCH RED & ORG LEADS AT L1 AND INSULATE RED LEAD. TRANSFORMER IS ENERGY LIMITING OR MAY HAVE CIRCUIT BREAKER.
4. FPI THERMISTOR PROVIDES LOW TEMPERATURE PROTECTION FOR WATER. WHEN USING ANTIFREEZE SOLUTIONS, CUT JW3 JUMPER.
5. REFER TO HUMIDISTAT OR T-STAT INSTALLATION, APPLICATION, AND OPERATION MANUAL FOR CONTROL WIRING. THERMOSTAT WIRING MUST BE RATED "CLASS I" AND VOLTAGE RATED EQUAL OR GREATER THAN UNIT SUPPLY VOLTAGE.
6. FACTORY CUT JW1 (CXM) OR JW4 (DXM). DRY CONTACT WILL BE AVAILABLE BETWEEN AL1 AND AL2. (MPC/LON ONLY)
7. TRANSFORMER SECONDARY GROUND VIA CXM/DXM BOARD STANDOFFS & SCREWS TO CONTROL BOX. (GROUND AVAILABLE FROM TOP TWO STANDOFFS AS SHOWN.)
8. DEHUMIDISTAT OPERATION (24 VAC AT HI) DIP 2.1 OFF, DIP 2.2 ON, DIP 2.3 OFF. HUMIDISTAT OPERATION (10 VAC AT HI) DIP 2.1 OFF, DIP 2.2 OFF, DIP 2.3 OFF.
9. REMOVE JUMPER WIRE AND CONNECT WIRES FOR POTENTIOMETER ACCESSORY OPTION. PLACE POTENTIOMETER LABEL BEFORE KNOB INSTALLATION.
10. BLOWER MOTOR IS WIRED FOR CONDENSOR WATER REHEAT OPTION WITH STAGE 1 BLOWER SET ON HIGH AND STAGE 2 BLOWER SET ON LOW.
FOR ANY OTHER COMBINATION OF SPEEDS, AT THE MOTOR ATTACH BLACK WIRE TO THE HIGHER OF THE TWO DESIRED SPEED TAPS AND THE BLUE WIRE TO THE LOWER OF THE TWO DESIRED SPEED TAPS.
DXM CONTROLLER FAULT CODES
OPERATION | STATUS LED (GREEN) | TEST LED (YELLOW) | FAULT LED (RED) | ALARM RELAY
NORMAL MODE | ON | OFF | NOTE 2 | OPEN
DXM IS NON FUNCTIONAL | OFF | OFF | OFF | OPEN
CODE RESET | ON | ON | NOTE 2 | CYCLE (NOTE 3)
NIGHT SETBACK | FLASHING CODE 2 | - | NOTE 2 | -
EMERGENCY SHUT DOWN | FLASHING CODE 3 | - | NOTE 2 | -
INVALID T-STAT INPUTS | FLASHING CODE 4 | - | NOTE 2 | -
NO FAULT IN MEMORY | ON | OFF | - | OPEN
HP: FAULT / (LOCKOUT) NOTE 1 | SLOW FLASH / FAST FLASH | OFF | FLASHING CODE 1 | OPEN / (CLOSED)
LP: FAULT / (LOCKOUT) NOTE 2 | SLOW FLASH / FAST FLASH | OFF | FLASHING CODE 2 | OPEN / (CLOSED)
FP1: FAULT / (LOCKOUT) NOTE 1 | SLOW FLASH / FAST FLASH | OFF | FLASHING CODE 4 | OPEN / (CLOSED)
FP2: FAULT / (LOCKOUT) NOTE 1 | SLOW FLASH / FAST FLASH | OFF | FLASHING CODE 5 | OPEN / (CLOSED)
CO: FAULT / (LOCKOUT) NOTE 1 | SLOW FLASH / FAST FLASH | OFF | FLASHING CODE 6 | OPEN / (CLOSED)
UNDER/OVER VOLTAGE | SLOW FLASH | OFF | FLASHING CODE 7 | OPEN (NOTE 4)
WATER/AIR FREEZE LOCKOUT | ON | OFF | FLASHING CODE 8 | CYCLE (NOTE 5)
SWAPPED FP1/FP2 LOCKOUT | FAST FLASH | OFF | FLASHING CODE 9 | CLOSED
1. STATUS LED (GREEN) - SLOW FLASH - CONTROLLER IN FAULT RETRY MODE. FAST FLASH - CONTROLLER IN LOCKOUT MODE SLOW FLASH = 1 FLASH PER EVERY 2 SECONDS. FAST FLASH = 2 FLASHES PER EVERY 1 SECOND.
2. FAULT LED (RED) FLASHES A CODE REPRESENTING LAST FAULT IN MEMORY. IF NO FAULT IN MEMORY, CODE 11 IS DISPLAYED.
3. CYCLES APPROPRIATE CODE, BY CYCLING ALARM RELAY IN THE SAME SEQUENCE AS FAULT LED.
4. ALARM RELAY CYCLES AFTER 15 MINUTES AND OPEN FOR 25 SECONDS.
5. ALARM RELAY CLOSES FOR 15 SECONDS AND OPEN FOR 25 SECONDS.
COMPONENT LOCATION
CAP
FP2
TH
FP1
CC
CO
PUR
DXM
LVTB
TRANS
CB
PR
SAS
POT
ACCESSORY
SEE NOTE 9
WHT
LVTB
WHT
SAS
PR
BRN
WHT
BLK
TYPICAL HEAT PUMP T-STAT SEE NOTE 5
COMPRESSOR
COOLING
FAN
REVERSING VALVE
DEHUMIDIFICATION
ALARM
SEE NOTE 6 FOR DRY CONTACT FOR ALARM
JW2
RED
HUMIDISTAT
SEE NOTE 5
RED
PUR
BLK
WHT
WHT
WHT

Typical Wiring Diagram – Single Phase TR Units with CXM Controller



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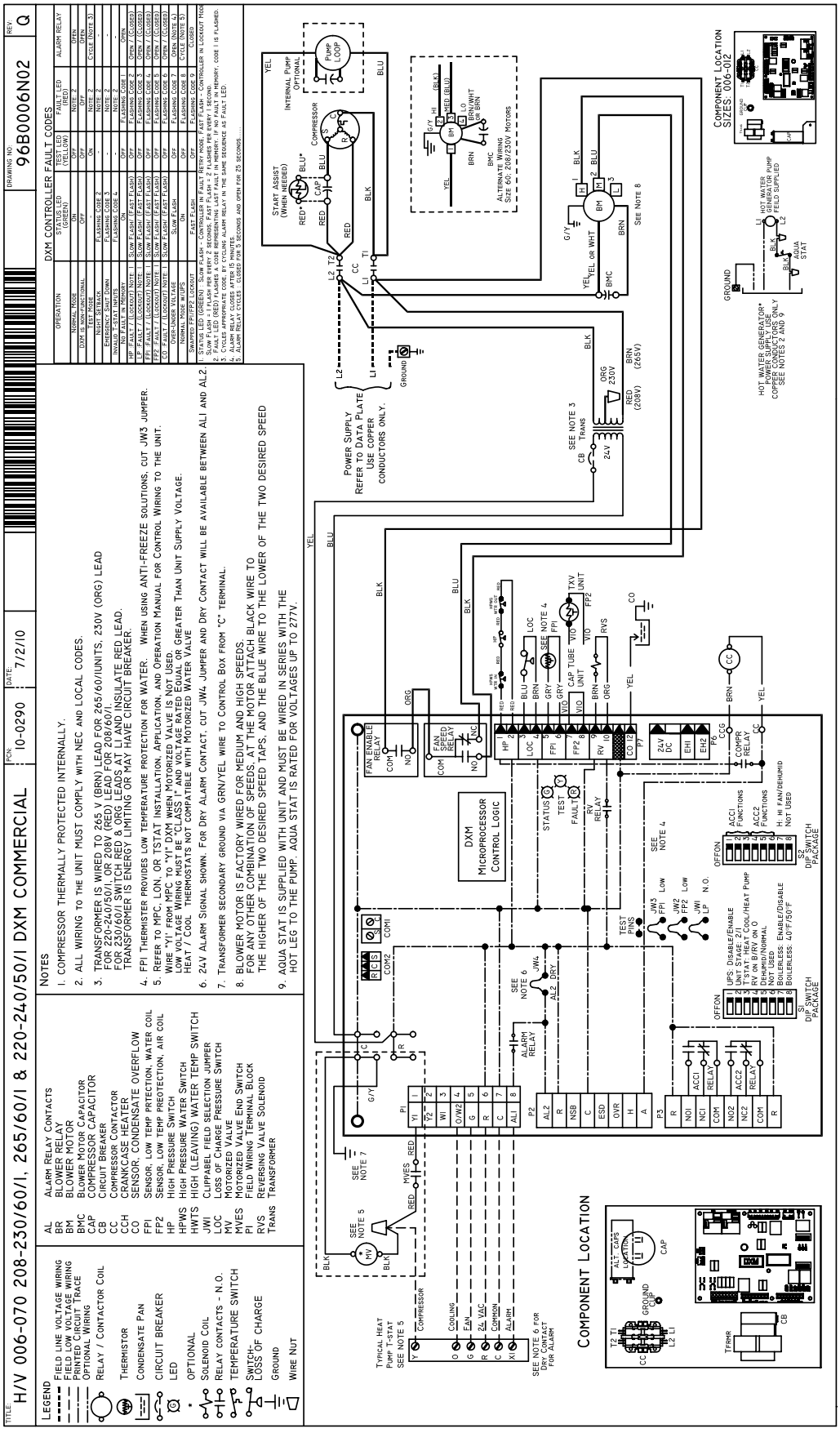
Typical Wiring Diagram – Single Phase TR Units with DXM Controller


TITLE
H/V 006-070 208-230/60/1, 265/60/1 & 220-240/50/1 DXM COMMERCIAL
PCN: 10-0290
DATE: 7/2/10
DRAWING NO: 96B0006N02
REV: Q
LEGEND
Field Line Voltage Wiring
Field Low Voltage Wiring
Printed Circuit Trace
Optional Wiring
Relay / Contactor Coil
Thermistor
Condensate Pan
Circuit Breaker
LED
Optional
Solenoid Coil
Relay Contacts - N.O.
Temperature Switch
Switch-Loss Of Charge
Ground
Wire Nut
AL Alarm Relay Contacts
BR Blower Relay
BM Blower Motor
BMC Blower Motor Capacitor
CAP Compressor Capacitor
CB Circuit Breaker
CC Compressor Contactor
CCH Crankcase Heater
CO Sensor, Condensate Overflow
FPI Sensor, Low Temp Prtection, Water Coil
FP2 Sensor, Low Temp Preotection, Air Coil
HP High Pressure Switch
HPWS High Pressure Water Switch
HWTS High (Leaving) Water Temp Switch
JWI Clippabel Field Selection Jumper
LOC Loss Of Charge Pressure Switch
MV Motorized Valve
MVES Motorized Valve End Switch
PI Field Wiring Terminal Block
RVS Reversing Valve Solenoid
Trans Transformer
Notes
1. Compressor Thermally Protected Internally.
2. All Wiring To The Unit Must Comply With NEC And Local Codes.
3. Transformer Is Wired To 265 V (BRN) Lead For 265/60/1units. 230V (ORG) Lead For 220-240/50/1, Or 208V (RED) Lead For 208/60/1. Insulate Red Lead. For 230/60/1 Switch Red (208V) Lead And Insulate Red Lead. Transformer Is Energy Limiting Or May Have Circuit Breaker.
4. FPI Thermister Provides Low Temperature Protection For Water. When Using Anti-Freeze Solutions, Cut JW3 Jumper.
5. Refer To MPC, LON, Or TSTAT Installation, Application, And Operation Manual For Control Wiring To The Unit. Wire 'Y1' From MPC To 'Y1' DXM When Motorized Valve Is Not Used. Low Voltage Wiring Must Be "Class 1" And Voltage Rated Equal Or Greater Than Unit Supply Voltage. Heat / Cool Thermostats Not Compatible With Motorized Water Valve
6. 24V Alarm Signal Shown. For Dry Alarm Contact, Cut JW4 Jumper And Dry Contact Will Be Available Between AL1 And AL2.
7. Transformer Secondary Ground Via Grn/Yel Wire To Control Box From "C" Terminal.
8. Blower Motor Is Factory Wired For Medium And High Speeds. For Any Other Combination Of Speeds, At The Motor Attach Black Wire To The Higher Of The Two Desired Speed Taps, And The Blue Wire To The Lower Of The Two Desired Speed
9. Aqua Stat Is Supplied With Unit And Must Be Wired In Series With The Hot Leg To The Pump. Aqua Stat Is Rated For Voltages Up To 277V.
DXM Controller Fault Codes
Operation | Status LED (Green) | Test LED (Yellow) | Fault LED (Red) | Alarm Relay
Normal Mode | On | Off | Off | Open
Dxm Not Powered | Off | Off | Off | Open
Test Mode | On | On | Off | Cycle (Note 3)
Night Setback | Flashing Code 2 | - | Note 2 | -
Random Start Power Up | Flashing Code 3 | - | Note 2 | -
Unassigned Inputs | Flashing Code 5 | - | Note 2 | -
No Fault In Memory | On | Off | Off | Open
HP Fault / (Lockout) Note 1 | Slow Flash (F-ast Flash) | Off | Flashing Code 1 | Open / (Closed)
LP Fault / (Lockout) Note 1 | Slow Flash (F-ast Flash) | Off | Flashing Code 2 | Open / (Closed)
FP1 Fault / (Lockout) Note 1 | Slow Flash (F-ast Flash) | Off | Flashing Code 4 | Open / (Closed)
FP2 Fault / (Lockout) Note 1 | Slow Flash (F-ast Flash) | Off | Flashing Code 5 | Open / (Closed)
CO Fault / (Lockout) Note 1 | Slow Flash (F-ast Flash) | Off | Flashing Code 6 | Open / (Closed)
Condensate Overflow | Slow Flash | Off | Flashing Code 7 | Open (Note 4)
Normal Mode W/UPS | On | Off | Flashing Code 8 | Cycle (Note 5)
Swapped FP1/FP2 Lockout | Fast Flash | Off | Flashing Code 9 | Closed
1. Status LED (Green) - Slow Flash - Controller In Fault Retry Mode, Fast Flash - Controller In Lockout Mode
2. Fault LED (Red) Flashes A Code Representing Last Fault In Memory. If No Fault In Memory, Code Is Flashed.
3. Cycles Appropriate Code, By Cycling Alarm Relay In The Same Sequence As Fault LED
4. Alarm Relay Closed For 5 Seconds
5. Alarm Relay Cycles - Closed For 5 Seconds And Open For 25 Seconds.
Component Location Sizes. 006-012
Component Location
Typical Heat Pump T-stat See Note 5
See Note 5
See Note 7
See Note 6 For Dry Contact For Alarm
See Note 6
See Note 4
See Note 3
See Note 8
Power Supply Refer To Data Plate Use Copper Conductors Only.
Start Assist (When Needed)
Internal Pump Optional
Pump Loop
Compressor
Alternate Wiring Size 60: 208/230V Motors
Hot Water Generator* Refer To Data Plate Copper Conductors Only See Notes 2 And 9
Hot Water Circulator Pump Field Supplied
Aqua Stat
Ground
DXM Microprocessor Control Logic
Fan Enable Relay
Fan Speed Relay
Cap Tube Unit
TXV Unit
Status
Test
Fault
RV Relay
Alarm Relay
Compr Relay
24V DC
Test Pins
UW3 FP1 Low
UW2 FP2 Low
UW1 LP N.O.
S1 DIP Switch Package
UPS: Disable/Enable
Unit Stage: 2/1
RV On B/RV On O
Dehumid/Normal
Not Used
Pump Size: Enable/Disable
Boilerless: 40°F/50°F
S2 DIP Switch Package
ACC1 Functions
ACC2 Functions
H: Hi Fan/Dehumid
Not Used
Alt. Caps Location
Ground Lug
Cap
Trmnl Strip
CB
T2 TI
CC
L2 LI

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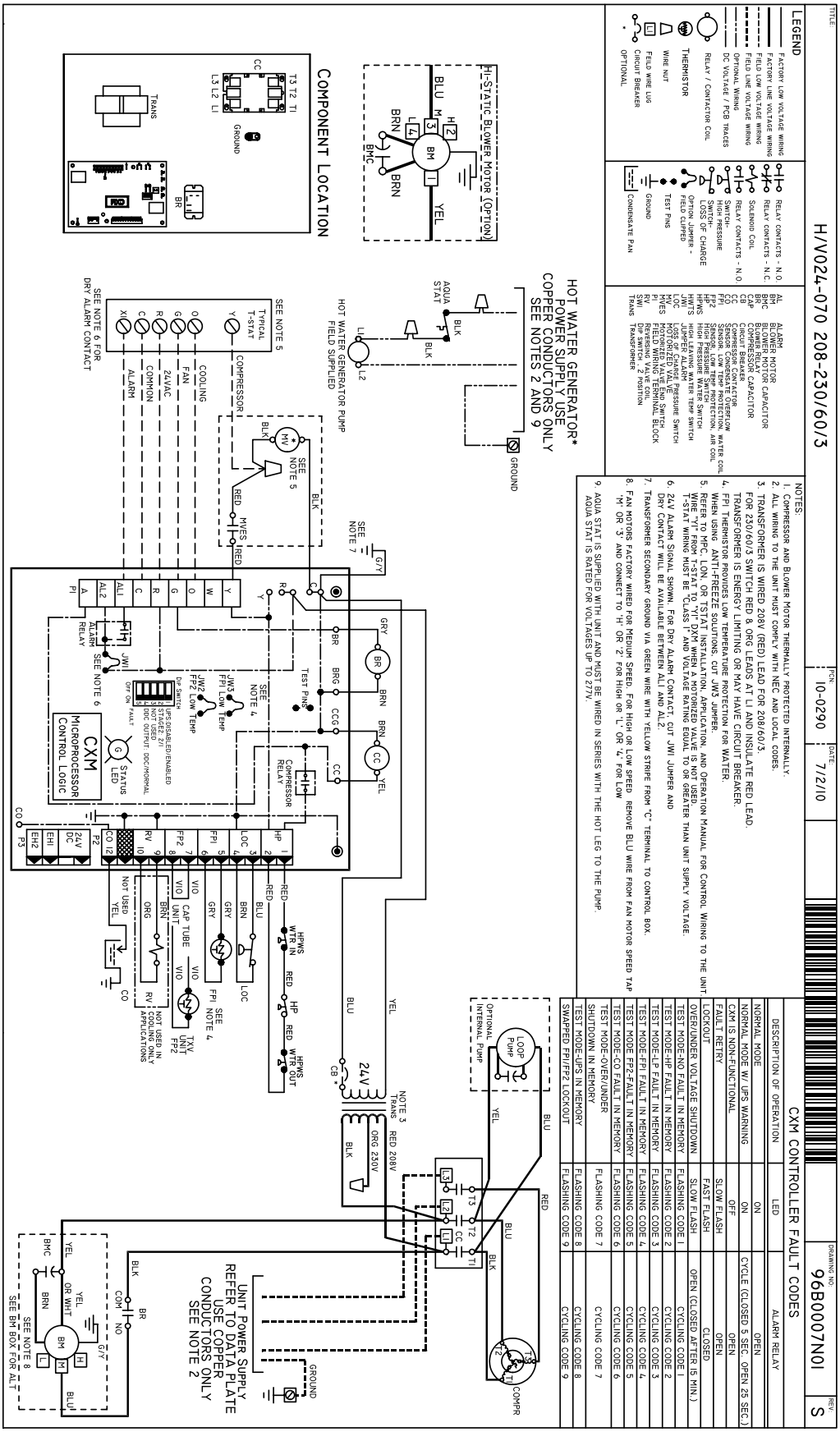
Typical Wiring Diagram – Three Phase 208/230V TR Units with CXM Controller



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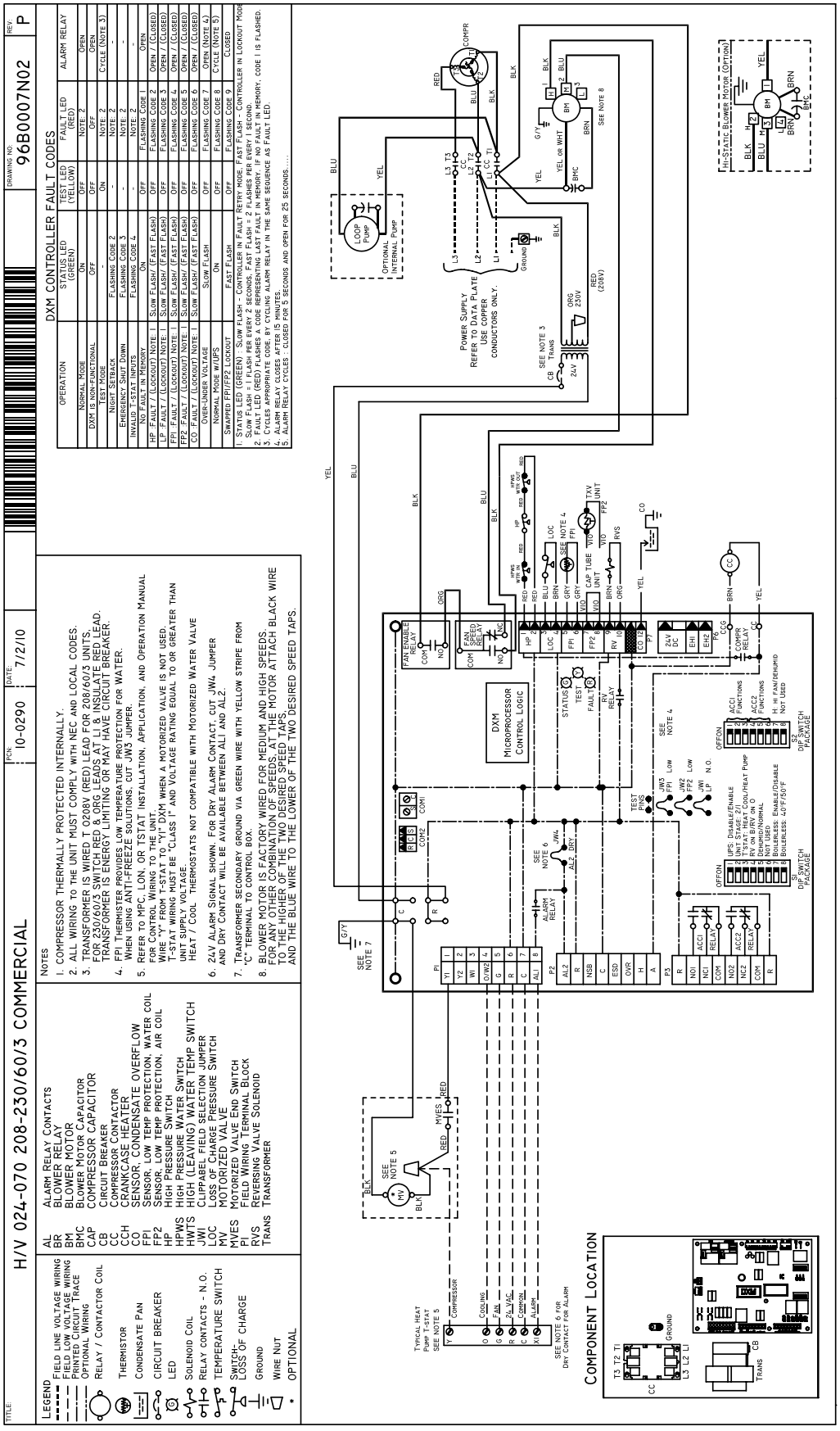
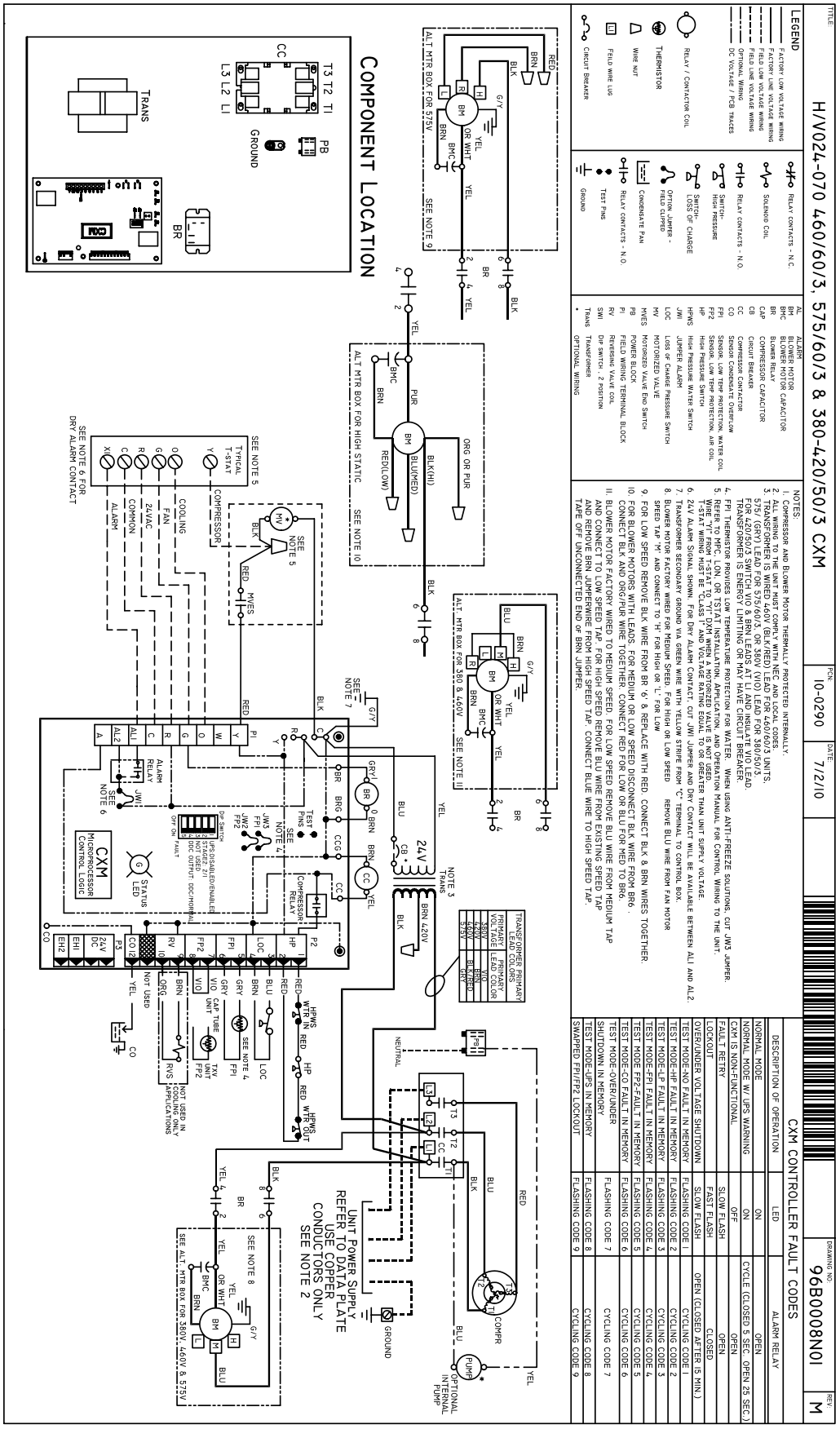
Typical Wiring Diagram – Three Phase 208/230V TR Units with DXM Controller

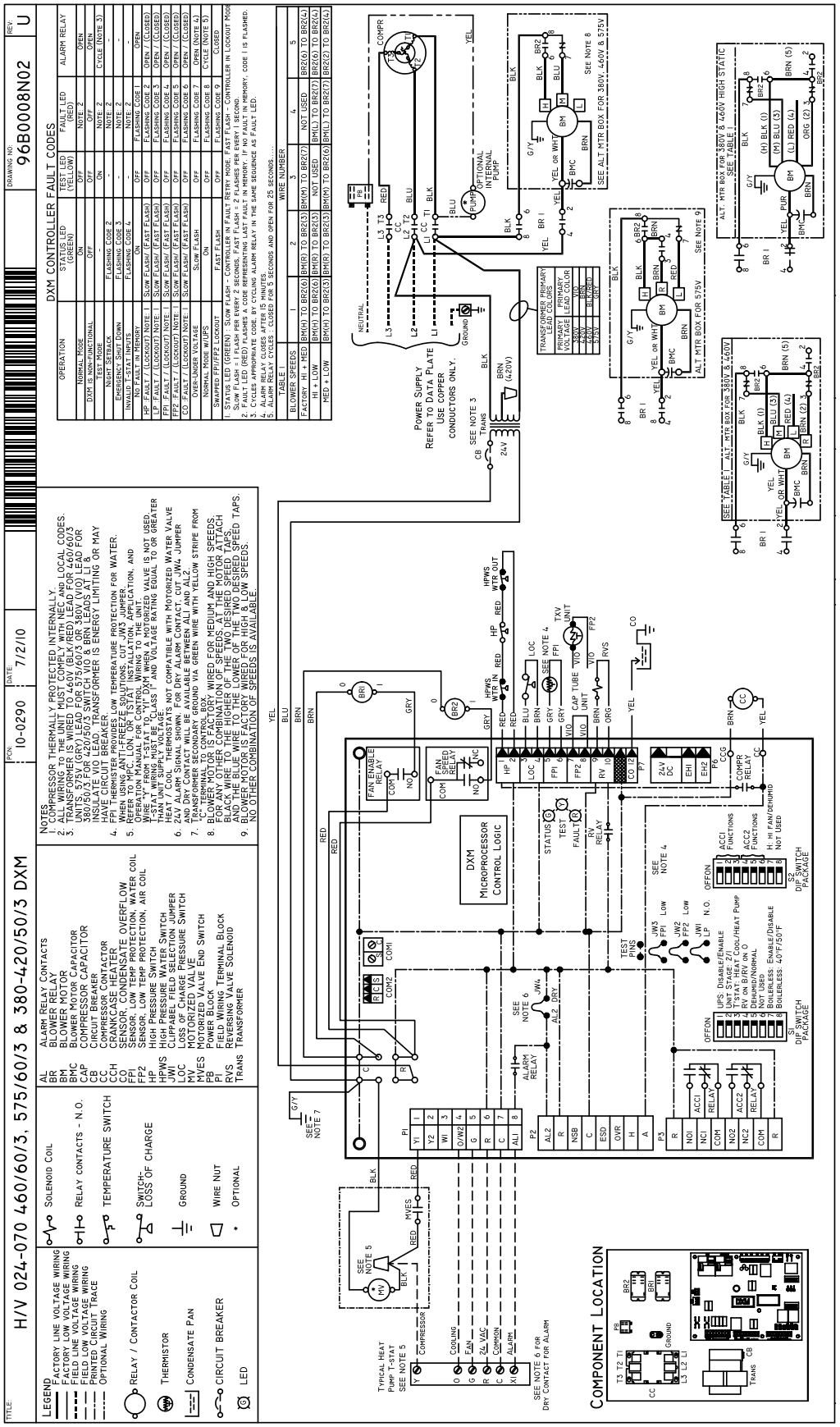

TITLE
H/V 024-070 208-230/60/3 COMMERCIAL
ECN
10-0290
DATE
7/2/10
DRAWING NO.
96B0007N02
REV.
P
LEGEND
FIELD LINE VOLTAGE WIRING
FIELD LOW VOLTAGE WIRING
PRINTED CIRCUIT TRACE
OPTIONAL WIRING
RELAY / CONTACTOR COIL
THERMISTOR
CONDENSATE FAN
CIRCUIT BREAKER
LED
SOLENOID COIL
RELAY CONTACTS - N.O.
TEMPERATURE SWITCH
SWITCH
LOSS OF CHARGE
GROUND
WIRE NUT
OPTIONAL
AL ALARM RELAY CONTACTS
BR BLOWER RELAY
BM BLOWER MOTOR
BMC BLOWER MOTOR CAPACITOR
CAP COMPRESSOR CAPACITOR
CB CIRCUIT BREAKER
CC COMPRESSOR CONTACTOR
CCH CRANKCASE HEATER
CO SENSOR, CONDENSATE OVERFLOW
FPI SENSOR, LOW TEMP PROTECTION, WATER COIL
FP2 SENSOR, LOW TEMP PROTECTION, AIR COIL
HP HIGH PRESSURE SWITCH
HPWS HIGH PRESSURE WATER SWITCH
HWTS HIGH (LEAVING) WATER TEMP SWITCH
JW1 CLIPPABEL FIELD SELECTION JUMPER
LOC LOSS OF CHARGE PRESSURE SWITCH
MV MOTORIZED VALVE
MVES MOTORIZED VALVE END SWITCH
PVS FIELD WIRING TERMINAL BLOCK
RVS REVERSING VALVE SOLENOID
TRANS TRANSFORMER
NOTES
1. COMPRESSOR THERMALLY PROTECTED INTERNALLY.
2. ALL WIRING TO THE UNIT MUST COMPLY WITH NEC AND LOCAL CODES.
3. TRANSFORMER IS WIRED T 0208V (RED) LEAD FOR 208/60/3 UNITS. FOR 230/60/3 SWITCH RED & ORG LEADS AT L1 & INSULATE RED LEAD. TRANSFORMER IS ENERGY LIMITING OR MAY HAVE CIRCUIT BREAKER.
4. THERMISTER PROVIDES LOW TEMPERATURE PROTECTION FOR WATER. WHEN USING ANTIFREEZE SOLUTIONS, CUT JW3 JUMPER.
5. REFER TO MFG. LON OR TSTAT INSTALLATION, APPLICATION, AND OPERATION MANUAL FOR CONTROL WIRING. WIRE "Y" FROM T-STAT TO "Y1" DXM WHEN A MOTORIZED VALVE IS NOT USED. T-STAT WIRING MUST BE "CLASS 1" AND VOLTAGE RATING EQUAL TO OR GREATER THAN UNIT SUPPLY VOLTAGE.
6. 24V ALARM SIGNAL SHOWN. FOR DRY ALARM CONTACT, CUT JW4 JUMPER AND DRY CONTACT WILL BE AVAILABLE BETWEEN AL1 AND AL2.
7. TRANSFORMER SECONDARY GROUND VIA GREEN WIRE WITH YELLOW STRIPE FROM "C" TERMINAL TO CONTROL BOX.
8. BLOWER MOTOR IS FACTORY WIRED FOR MEDIUM AND HIGH SPEEDS. FOR ANY OTHER COMBINATION OF SPEEDS, AT THE MOTOR ATTACH BLACK WIRE TO THE HIGHER OF THE TWO DESIRED SPEED TAPS, AND THE BLUE WIRE TO THE LOWER OF THE TWO DESIRED SPEED TAPS.
DXM CONTROLLER FAULT CODES
OPERATION | STATUS LED (GREEN) | TEST LED (YELLOW) | FAULT LED (RED) | ALARM RELAY
Normal Mode | On | Off | Note 2 | Open
DXM is Non-Functional | Off | Off | Off | Open
Test Mode | - | On | Note: 2 | Cycle (Note 3)
Night Setback | Flashing Code 2 | - | Note: 2 | -
Emergency Shut Down | Flashing Code 3 | - | Note: 2 | -
Invalid T-stat Inputs | Flashing Code 4 | - | Note: 2 | -
Not Fault in Memory | On | - | Off | Open
HP Fault / (Lockout) Note 1 | Slow Flash/ (Fast Flash) | - | Flashing Code 1 | Open / (Closed)
LP Fault / (Lockout) Note 1 | Slow Flash/ (Fast Flash) | - | Flashing Code 2 | Open / (Closed)
FP1 Fault / (Lockout) Note 1 | Slow Flash/ (Fast Flash) | - | Flashing Code 4 | Open / (Closed)
FP2 Fault / (Lockout) Note 1 | Slow Flash/ (Fast Flash) | - | Flashing Code 5 | Open / (Closed)
CO Fault / (Lockout) Note 1 | Slow Flash/ (Fast Flash) | - | Flashing Code 6 | Open / (Closed)
Over-Under Voltage | Slow Flash | - | Flashing Code 7 | Open (Note 4)
Normal Mode w/UPS | On | - | Flashing Code 8 | Cycle (Note 5)
Swapped FP1/FP2 Lockout | Fast Flash | - | Flashing Code 9 | Closed
1. Status LED (Green) - Slow Flash - Controller in Fault Retry Mode. Fast Flash - Controller in Lockout Mode. Slow Flash = 1 flash per every 2 seconds. Fast Flash = 2 flashes per every 1 second.
2. Fault LED (Red) flashes a code representing last fault in memory. If no fault in memory, code 1 is flashed.
3. Cycles approximate 30 seconds.
4. Alarm relay cycles after 15 minutes.
5. Alarm Relay cycles - closed for 5 seconds and open for 25 seconds....
Component Location
Typical Heat Pump Shown See Note 5
Compressor
Cooling
Fan
Rev Valve
Common
Alarm
See Note 6 for Dry Contact for Alarm
See Note 7
See Note 5
See Note 6
See Note 4
See Note 8
Optional Internal Pump
Loop Pump
Ground
Power Supply Refer to Data Plate for Copper Conductors Only.
See Note 3
Trans
CB
24V
ORG 230V
RED (208V)
Compr
Hi-Static Blower Motor (Option)
DXM Microprocessor Control Logic
Fan/Enable Relay
Status
Test
Fault
Test Pins
Jw3 FPI Low
Jw2 FP2 Low
Jw1 LP N.O
Alarm Relay
Alt Relay
Rev Valve Relay
Loc
Hp
Hpws
Fp1
Fp2
Rv
Co
Cap Tube
Txv Unit
Rvs
Comp Relay
2av DC
Eh1
Eh2
Pc
Ecg
Dip Switch Package
Accessory Relay 1
Accessory Relay 2
Ufs: Disable/Enable
Unit Start Y1 Only
Rv on B/Rv on O
Not Used
Not Used
Not Used
Not Used
Not Used
Boilerless: Enable/Disable
Boilerless: 40°F/50°F
Acc1 Functions
Acc2 Functions
Hi Fan/Reh Mid
Not Used
Off
On
Aux Heat
Dehumidification Normal
Dehumidification Enhanced
Test Mode
Not Used
Not Used
Not Used
Not Used
Not Used

Typical Wiring Diagram – Three Phase 460/575V TR Units with CXM Controller


TITLE:
H/V024-070 460/60/3, 575/60/3 & 380-420/50/3 CXM
PCN: 10-0290
DATE: 7/2/10
DRAWING NO: 96B0008N01
REV: M
LEGEND
NOTES:
CXM CONTROLLER FAULT CODES
DESCRIPTION OF OPERATION
LED
ALARM RELAY
COMPONENT LOCATION
TRANS
PB
GROUND
CXM
MICROPROCESSOR CONTROL LOGIC
STATUS LED
ALARM RELAY
COMPRESSOR RELAY
TEST PINS
DIP SWITCH
HPWS
LOC
HP
CAP TUBE
SEE NOTE 4
RVS
NOT USED IN COOLING ONLY APPLICATIONS
UNIT Power Supply
REFER TO DATA PLATE
USE COPPER
CONDUCTORS ONLY
SEE NOTE 2
GROUND
COMPR
PUMP
OPTIONAL INTERNAL PUMP
SEE NOTE 5
TYPICAL T-STAT
COMPRESSOR
COOLING FAN
24VAC COMMON
ALARM
SEE NOTE 6 FOR DRY ALARM CONTACT
SEE NOTE 7
SEE NOTE 8
SEE ALT MTR BOX FOR 380V, 460V & 575V
ALT MTR BOX FOR 575V
ALT MTR BOX FOR 380 & 460V
ALT MTR BOX FOR HIGH STATIC
SEE NOTE 9
SEE NOTE 10
SEE NOTE 11
TRANSFORMER PRIMARY VOLTAGE
PRIMARY LEAD COLOR
24V
CB
NEUTRAL
FACTORY LOW VOLTAGE WIRING
FACTORY LINE VOLTAGE WIRING
FIELD LOW VOLTAGE WIRING
FIELD LINE VOLTAGE WIRING
OPTIONAL WIRING
DC VOLTAGE / PCB TRACES
RELAY / CONTACTOR COIL
THERMISTOR
WIRE NUT
FIELD WIRE LUG
CIRCUIT BREAKER
RELAY CONTACTS - N.C.
SOLENOID COIL
RELAY CONTACTS - N.O.
SWITCH- HIGH PRESSURE
SWITCH- LOSS OF CHARGE
OPTION JUMPER - FIELD CLIPPED
CONDENSATE FAN
RELAY CONTACTS - N.O.
TEST PINS
GROUND
ALARM
BLOWER MOTOR
BLOWER MOTOR CAPACITOR
BLOWER RELAY
COMPRESSOR CAPACITOR
CIRCUIT BREAKER
COMPRESSOR CONTACTOR
SENSOR CONDENSATE OVERFLOW
SENSOR, LOW TEMP PROTECTION, WATER COIL
SENSOR, LOW TEMP PROTECTION, AIR COIL
HIGH PRESSURE SWITCH
HIGH PRESSURE WATER SWITCH
JUMPER ALARM
LOSS OF CHARGE PRESSURE SWITCH
MOTORIZED VALVE
MOTORIZED VALVE END SWITCH
POWER BLOCK
FIELD WIRING TERMINAL BLOCK
REVERSING VALVE COIL
DIP SWITCH - 2 POSITION
TRANSFORMER
OPTIONAL WIRING
1. COMPRESSOR AND BLOWER MOTOR THERMALLY PROTECTED INTERNALLY.
2. ALL WIRING TO THE UNIT MUST COMPLY WITH NEC AND LOCAL CODES.
3. TRANSFORMER IS WIRED 460V (BLK/RED) LEAD FOR 460/60/3 UNITS. FACTORY WIRED FOR 575V (GRY) LEAD FOR 575/60/3, OR 380V (VIO) LEAD FOR 380/50/3. TRANSFORMER IS ENERGY LIMITING OR MAY HAVE CIRCUIT BREAKER.
4. FP1 THERMISTOR PROVIDES LOW TEMPERATURE PROTECTION FOR WATER - WHEN USING ANTI-FREEZE SOLUTIONS, CUT JW3 JUMPER.
5. REFER TO MPC, LON, OR T-STAT INSTALLATION, APPLICATION, AND OPERATION MANUAL FOR CONTROL WIRING TO THE UNIT.
T-STAT WIRING MUST BE 'CLASS 1' AND VOLTAGE RATING EQUAL TO OR GREATER THAN UNIT SUPPLY VOLTAGE.
6. 24V ALARM SIGNAL SHOWN. FOR DRY ALARM CONTACT, CUT JW1 JUMPER AND DRY CONTACT WILL BE AVAILABLE BETWEEN AL1 AND AL2.
7. TRANSFORMER SECONDARY GROUND VIA GREEN WIRE WITH YELLOW STRIPE FROM 'C' TERMINAL TO CONTROL BOX.
8. BLOWER MOTOR FACTORY WIRED FOR MEDIUM SPEED. FOR HIGH OR LOW SPEED REMOVE BLU WIRE FROM FAN MOTOR SPEED TAP 'M' AND CONNECT TO 'H' FOR HIGH OR 'L' FOR LOW
9. FOR LOW SPEED REMOVE BLK WIRE FROM BR '6' & REPLACE WITH RED. CONNECT BLK & BRN WIRES TOGETHER.
10. FOR BLOWER MOTORS WITH LEADS, FOR MEDIUM OR LOW SPEED DISCONNECT BLK WIRE FROM BR6. CONNECT BLK AND ORG/PUR WIRE TOGETHER. CONNECT RED FOR LOW OR BLU FOR MED TO BR6.
11. BLOWER MOTOR FACTORY WIRED TO MEDIUM SPEED. FOR LOW SPEED REMOVE BLU WIRE FROM MEDIUM TAP AND CONNECT TO LOW SPEED TAP. FOR HIGH SPEED REMOVE BLU WIRE FROM EXISTING SPEED TAP AND REMOVE BRN JUMPER WIRE FROM HIGH SPEED TAP. CONNECT BLUE WIRE TO HIGH SPEED TAP. TAPE OFF UNCONNECTED END OF BRN JUMPER.
NORMAL MODE — LED: ON — ALARM RELAY: OPEN
NORMAL MODE W/ UPS WARNING — ON — CYCLE (CLOSED 5 SEC. OPEN 25 SEC.)
CXM IS NON-FUNCTIONAL — OFF — OPEN
FAULT RETRY — SLOW FLASH — OPEN
LOCKOUT — FAST FLASH — CLOSED
OVER/UNDER VOLTAGE SHUTDOWN — SLOW FLASH — OPEN (CLOSED AFTER 15 MIN.)
TEST MODE-NO FAULT IN MEMORY — FLASHING CODE 1 — CYCLING CODE 1
TEST MODE-HP FAULT IN MEMORY — FLASHING CODE 2 — CYCLING CODE 2
TEST MODE-LP FAULT IN MEMORY — FLASHING CODE 3 — CYCLING CODE 3
TEST MODE-FP1 FAULT IN MEMORY — FLASHING CODE 4 — CYCLING CODE 4
TEST MODE FP2 FAULT IN MEMORY — FLASHING CODE 5 — CYCLING CODE 5
TEST MODE-CO FAULT IN MEMORY — FLASHING CODE 6 — CYCLING CODE 6
TEST MODE-OVER/UNDER SHUTDOWN IN MEMORY — FLASHING CODE 7 — CYCLING CODE 7
TEST MODE-UPS IN MEMORY — FLASHING CODE 8 — CYCLING CODE 8
SWAPPED FP1/FP2 LOCKOUT — FLASHING CODE 9 — CYCLING CODE 9

ClimateMaster works continually to improve its products. As a result, the design and specifications of each product at the time of order may be changed without notice and may not be as described herein. Please contact ClimateMaster's Customer Service Department at 1-405-745-6000 for specific information on the current design and specifications. Statements and other information contained herein are not express warranties and do not form the basis of any bargain between the parties, but are merely ClimateMaster's opinion or commendation of its products. The latest version of this document is available at **climatemaster.com.**

Typical Wiring Diagram – Three Phase 460/575V TR Units with DXM Controller


TITLE: H/V 024-070 460/60/3, 575/60/3 & 380-420/50/3 DXM
FCN: 10-0290
DATE: 7/2/10
DRAWING NO: 96B0008N02
REV: U
DXM CONTROLLER FAULT CODES
OPERATION | STATUS LED (YEL/LOW) | TEST LED (YEL/LOW) | FAULT LED (RED) | ALARM RELAY
Normal Mode | ON | Off | Off | Open
DXM is non-functional | Off | Off | Off | Open
Test Mode | - | On | Note 2 | Open
Night Setback | Flashing Code 2 | - | Note 2 | Cycle (Note 3)
Emergency Shut Down | Flashing Code 3 | - | Note 2 | -
Water Fault Lockout | Flashing Code 4 | - | Note 2 | -
No Fault in Memory | On | Off | Off | Open
HP Fault / (Lockout) Note 1 | Slow Flash/ (Fast Flash) | Off | Flashing Code 2 | Open / (Closed)
LP Fault / (Lockout) Note 1 | Slow Flash/ (Fast Flash) | Off | Flashing Code 3 | Open / (Closed)
FP1 Fault / (Lockout) Note 1 | Slow Flash/ (Fast Flash) | Off | Flashing Code 4 | Open / (Closed)
FP2 Fault / (Lockout) Note 1 | Slow Flash/ (Fast Flash) | Off | Flashing Code 5 | Open / (Closed)
CO Fault / (Lockout) Note 1 | Slow Flash/ (Fast Flash) | Off | Flashing Code 7 | Open / (Closed)
Over/Under Voltage | Slow Flash | Off | Flashing Code 8 | Open (Note 6)
Normal Mode w/UPS | On | Off | Flashing Code 8 | Cycle (Note 5)
Swapped FP1/FP2 Lockout | Fast Flash | Off | Flashing Code 9 | Closed
1. Status LED (Green) - Slow Flash - Controller in Fault Retry Mode. Fast Flash - Controller in Lockout Mode
Slow Flash = 1 Flash per every 2 seconds. Fast Flash = 2 Flashes per every 1 second.
2. Fault LED (Red) flashes a code representing last fault in memory. If no fault in memory, code 1 is flashed.
3. Cycle (open/close) 3 times then lockout for one hour.
4. Alarm relay closes after 15 minutes
5. Alarm relay cycles closed for 5 seconds and open for 25 seconds.
TABLE 1
BLOWER SPEEDS | WIRE NUMBER 1 | 2 | 3 | 4 | 5
Factory HI + Med | BM(H) to BR2(6) | BM(R) to BR2(5) | BM(M) to BR2(7) | NOT USED | BR2(6) to BR2(4)
HI + Low | BM(H) to BR2(6) | BM(R) to BR2(5) | NOT USED | BM(L) to BR2(7) | BR2(6) to BR2(4)
Med + Low | BM(H) to BR2(5) | BM(R) to BR2(5) | BM(M) to BR2(6) | BM(L) to BR2(7) | BR2(5) to BR2(4)
LEGEND
Factory Line Voltage Wiring
Factory Low Voltage Wiring
Field Line Voltage Wiring
Field Low Voltage Wiring
Printed Circuit Trace
Optional Wiring
Relay / Contactor Coil
Thermistor
Condensate Pan
Circuit Breaker
LED
Solenoid Coil
Relay Contacts - N.O.
Temperature Switch
Switch= Loss of Charge
Ground
Wire Nut
Terminal Block
Reversing Valve Solenoid
Optional
AL Alarm Relay Contacts
BR Blower Relay
BM Blower Motor
BMC Blower Motor Capacitor
CAP Compressor Capacitor
CB Circuit Breaker
C Compressor Contactor
CCH Crankcase Heater
CO Sensor, Condensate Overflow
FPI Sensor, Low Temp Protection, Water Coil
FP2 Sensor, Low Temp Protection, Air Coil
HP High Pressure Switch
HPWS Clipped Field Selection Jumper
JW1 Loss of Charge Pressure Switch
LOC Motorized Valve
MV Motorized Valve End Switch
MVES Power Block
PB Field Wiring Terminal Block
RVS Reversing Valve Solenoid
TRANS Transformer
NOTES
1. Compressor thermally protected internally.
2. All wiring to the unit must comply with NEC and local codes.
3. To convert units wired for 460/60/3 to 575/60/3 or 380/50/3 units, 575V (GRY) lead for 575/60/3 or 380V (VIO) lead for 380/50/3 for 420/50/3 switch VIO & BRN leads at L1 & insulate the VIO lead. Transformer is energy limiting or may be fused if required.
4. FP1 thermister provides low temperature protection for water. When using anti-freeze solutions, cut JW3 jumper.
5. Refer to HPC, LON, or CTSTAT installation, and application manuals for more information.
6. 24V alarm signal shown. For dry alarm contact, cut JW4 jumper and add separate 24VAC source.
7. Transformer is available between ALI and ALI with yellow stripe from "C" terminal to control box.
8. Blower motor is factory wired for medium and high speeds. For low speed, remove black wire from M2 and attach black wire to the higher of the two desired speed taps, and the blue wire to the lower of the two desired speed taps. Blower motor is factory wired for high & low speeds. No other combination of speeds is available.
Component Location
Typical Heat Pump T-Stat See Note 5
Compressor
Cooling
Fan
24 VAC
Common
Alarm
See Note 6 for Dry Contact for Alarm
See Note 5
See Note 7
See Note 4
See Note 8
See Note 9
DXM Microprocessor Control Logic
Fan Enable Relay
Fan Speed Relay
Alarm Relay
Reversing Valve Relay
Compr Relay
Power Supply Refer to Data Plate Use Copper Conductors Only.
Transformer Primary Lead Color
Primary Voltage | Primary Lead Color
208V | RED
230V | ORG
380V | BLU (BLANK)
460V | YEL
575V | GRY
Optional Internal Pump
Alt Mtr Box for 380V & 460V High Static
Alt Mtr Box for 380V & 460V
Alt Mtr Box for 575V
See Table 1
DIP Switch Package
UPS: Disable/Enable
Unit Stage 2/1
Dehumid/Normal
Not Used
Boilerless: Enable/Disable
Boilerless: 40°F/50°F
ACC1 Functions
ACC2 Functions
H: HI Fan/Dehumid
Not Used
Test Pins
Status
Test
Fault
Cap Tube
Unit
Txv
HPWS Water Out
HPWS Water In
Loc
Compr
Cc
Co
Fp1
Fp2
Rvs
Jw1 LP N.O.
Jw2 FP2 Low
Jw3 FP1 Low
Jw4 Alt Dry
Compressor
Ground
Trans
Cb
Pump
Optional Internal Pump
Neutral
Ground
Power Supply Refer to Data Plate Use Copper Conductors Only.
See Note 3
Trans
Cb
24V
Brn (420V)
Blk
Red
Yel
Blu
Org
Grn
Gry
Vio
Brn
Pnk
Wht
Gry/Y
Yel or Wht
Bmc
Br1
Br2
Compr
Pump
Optional Internal Pump
See Alt Mtr Box for 380V, 460V & 575V
See Note 8
See Note 9
See Table 1
Alt Mtr Box for 380V & 460V
Alt Mtr Box for 575V
Alt Mtr Box for 380V & 460V High Static
See Table 1
(H) Blk (1)
(M) Blu (3)
(L) Red (4)
Org (2)
Brn (5)
Blk (1)
Blu (3)
Red (4)
Brn (5)
Org (2)

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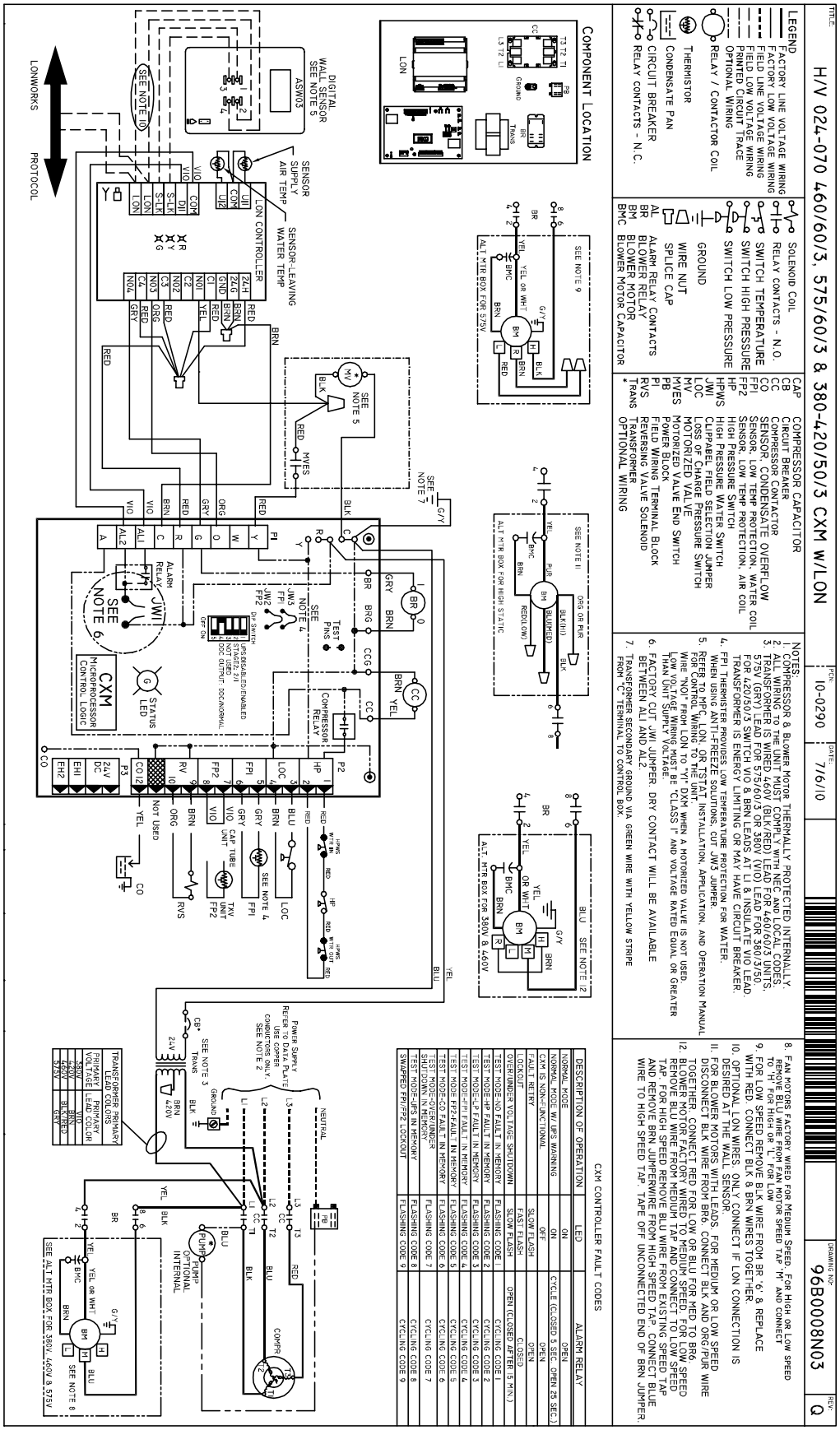
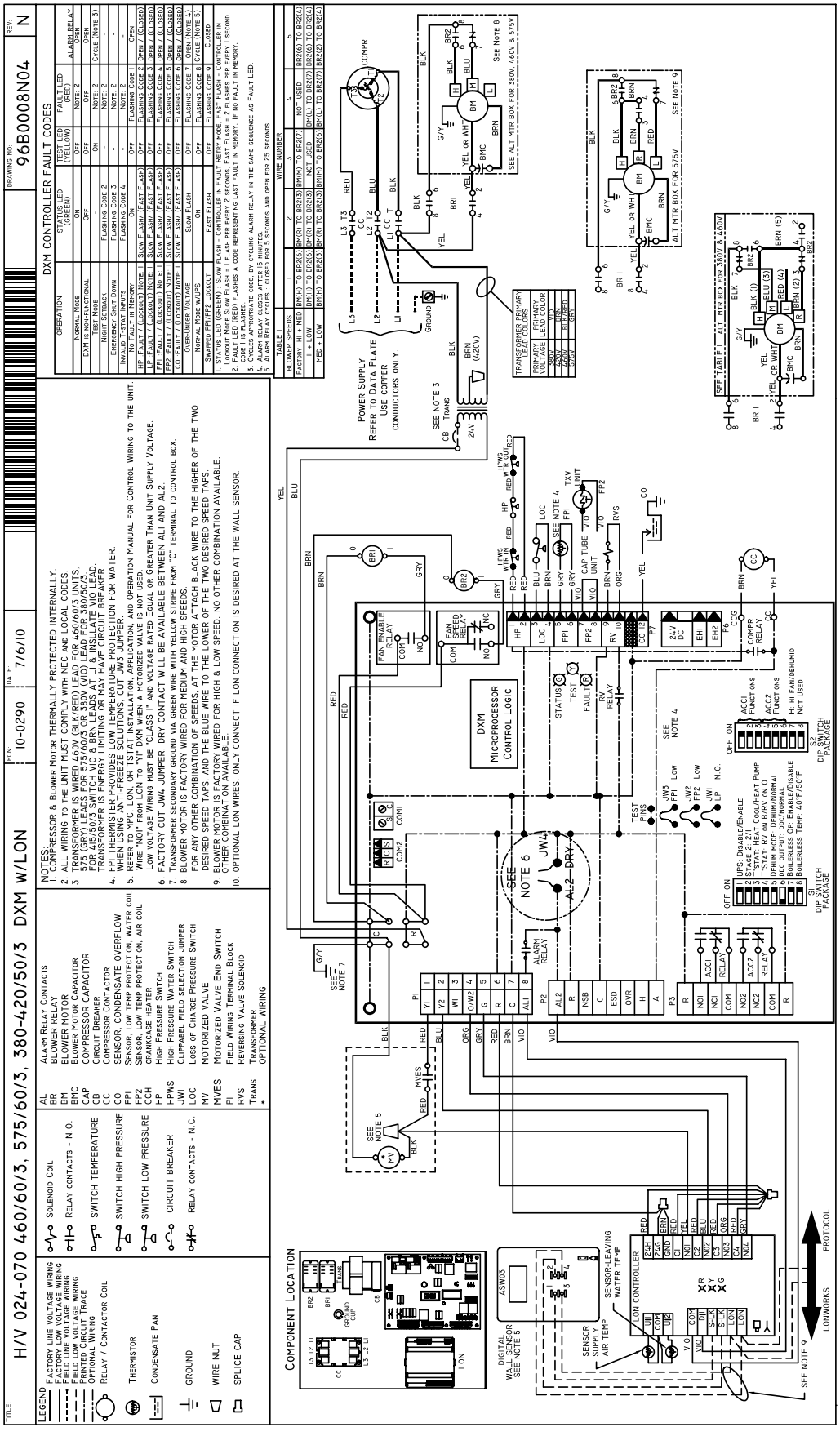
Typical Wiring Diagram – Three Phase 460/575V TR Units with CXM And LON Controller


TITLE: H/V 024-070 460/60/3, 575/60/3 & 380-420/50/3 CXM w/LON
DRAWING NO: 96B0008N03
REV: Q
DATE: 7/6/10
PCN: 10-0290
LEGEND
FACTORY LINE VOLTAGE WIRING
FACTORY LOW VOLTAGE WIRING
FIELD LINE VOLTAGE WIRING
FIELD LOW VOLTAGE WIRING
PRINTED CIRCUIT TRACE
OPTIONAL WIRING
RELAY / CONTACTOR COIL
THERMISTOR
CONDENSATE PAN
CIRCUIT BREAKER
RELAY CONTACTS - N.C.
SOLENOID COIL
RELAY CONTACTS - N.O.
SWITCH TEMPERATURE
SWITCH HIGH PRESSURE
SWITCH LOW PRESSURE
GROUND
WIRE NUT
SPLICE CAP
ALARM RELAY CONTACTS
BLOWER RELAY
BLOWER MOTOR
BLOWER MOTOR CAPACITOR
CAP COMPRESSOR CAPACITOR
CB CIRCUIT BREAKER
CC COMPRESSOR CONTACTOR
CO SENSOR, CONDENSATE OVERFLOW
FPI SENSOR, LOW TEMP PROTECTION, WATER COIL
FP2 SENSOR, LOW TEMP PROTECTION, AIR COIL
HP HIGH PRESSURE SWITCH
HPWS HIGH PRESSURE WATER SWITCH
JWI CLIPPABEL FIELD SELECTION JUMPER
LOC LOSS OF CHARGE PRESSURE SWITCH
MV MOTORIZED VALVE
MVES MOTORIZED VALVE END SWITCH
PB POWER BLOCK
FI FIELD WIRING TERMINAL BLOCK
RVS REVERSING VALVE SOLENOID
* TRANS TRANSFORMER
OPTIONAL WIRING
NOTES:
1. COMPRESSOR & BLOWER MOTOR THERMALLY PROTECTED, INTERNALLY
2. ALL WIRING TO THE UNIT MUST COMPLY WITH NEC AND LOCAL CODES.
3. TRANSFORMER IS WIRED 460V (BLK/RED) LEAD FOR 460/60/3 UNITS. 575V (GRY) LEAD FOR 575/60/3 OR 380V (VIO) LEAD FOR 380/3/50. FOR 420/50/3 SWITCH VIO & BRN LEADS AT LI & INSULATE VIO LEAD.
4. FPI THERMISTER PROVIDES LOW TEMPERATURE PROTECTION FOR WATER. WHEN USING ANTI-FREEZE SOLUTIONS, CUT JW3 JUMPER.
5. REFER TO CXM CONTROLS INSTALLATION, APPLICATION, AND OPERATION MANUAL FOR DETAILED CONTROL WIRING DESCRIPTIONS. WIRE "NO1" FROM LON TO "Y1" DXM WHEN A MOTORIZED VALVE IS NOT USED. LOW VOLTAGE WIRING MUST BE "CLASS 1" AND VOLTAGE RATED EQUAL OR GREATER THAN UNIT SUPPLY VOLTAGE.
6. FACTORY CUT JW1 JUMPER. DRY CONTACT WILL BE AVAILABLE BETWEEN ALI AND AL2.
7. TRANSFORMER SECONDARY GROUND VIA GREEN WIRE WITH YELLOW STRIPE FROM "C" TERMINAL TO CONTROL BOX.
8. FAN MOTORS FACTORY WIRED FOR MEDIUM SPEED. FOR HIGH OR LOW SPEED REMOVE BLU WIRE FROM FAN MOTOR SPEED TAP 'M' AND CONNECT TO 'H' FOR HIGH OR 'L' FOR LOW
9. FOR LOW SPEED REMOVE BLK WIRE FROM BR '6' & REPLACE WITH RED. CONNECT BLK & BRN WIRES TOGETHER.
10. OPTIONAL LON WIRES. ONLY CONNECT IF LON CONNECTION IS DESIRED AT THE WALL SENSOR.
11. DISCONNECT BOX WIRE LEADS. FOR MEDIUM OR LOW SPEED BLOWER MOTOR FACTORY WIRED WITH LEADS CONNECTED BLK AND ORG/PUR WIRE TOGETHER. CONNECT RED FOR LOW OR BLU FOR MED TO BRN SPEED TAP. FOR HIGH SPEED REMOVE BLU WIRE FROM MEDIUM TAP AND CONNECT TO LOW SPEED AND REMOVE BRN JUMPERWIRE FROM HIGH SPEED TAP. CONNECT BLUE WIRE TO HIGH SPEED TAP. TAPE OFF UNCONNECTED END OF BRN JUMPER.
12. BLOWER MOTOR FACTORY WIRED TO MEDIUM SPEED TAP FOR LOW SPEED OPERATION.
COMPONENT LOCATION
CXM CONTROLLER FAULT CODES
DESCRIPTION OF OPERATION | LED | ALARM RELAY
NORMAL MODE | ON | OPEN
NORMAL MODE W/ UPS WARNING | ON | CYCLE (CLOSED 5 SEC. OPEN 25 SEC.)
CXM IS NON-FUNCTIONAL | SLOW FLASH | OPEN
LOCKOUT | FAST FLASH | CLOSED
OVER/UNDER VOLTAGE SHUTDOWN | SLOW FLASH | OPEN (CLOSED AFTER 15 MIN.)
TEST MODE-NO FAULT IN MEMORY | FLASHING CODE 1 | CYCLING CODE 1
TEST MODE-HP FAULT IN MEMORY | FLASHING CODE 2 | CYCLING CODE 2
TEST MODE-LP FAULT IN MEMORY | FLASHING CODE 3 | CYCLING CODE 3
TEST MODE-FP1 FAULT IN MEMORY | FLASHING CODE 4 | CYCLING CODE 4
TEST MODE-FP2 FAULT IN MEMORY | FLASHING CODE 5 | CYCLING CODE 5
TEST MODE-CO FAULT IN MEMORY | FLASHING CODE 6 | CYCLING CODE 6
TEST MODE-OVER/UNDER SHUTDOWN IN MEMORY | FLASHING CODE 7 | CYCLING CODE 7
TEST MODE-UPS IN MEMORY | FLASHING CODE 8 | CYCLING CODE 8
SWAPPED FP1/FP2 LOCKOUT | FLASHING CODE 9 | CYCLING CODE 9
COMPONENT LOCATION
DIGITAL WALL SENSOR SEE NOTE 3 ASWD3
SENSOR SUPPLY AIR TEMP
SENSOR-LEAVING WATER TEMP
LON CONTROLLER
LONWORKS PROTOCOL
SEE NOTE 10
SEE NOTE 9
SEE NOTE 5
SEE NOTE 7
SEE NOTE 11
SEE NOTE 6
SEE NOTE 4
SEE NOTE 12
SEE NOTE 3
SEE NOTE 4
SEE NOTE 8
ALT MTR BOX FOR 575V
ALT MTR BOX FOR HIGH STATIC
ALT MTR BOX FOR 380V & 460V
CXM MICROPROCESSOR CONTROL LOGIC
ALARM RELAY
JW1
STATUS LED
TEST PINS
DIP SWITCH
COMPRESSOR RELAY
CAP TUBE
TXV UNIT
HPWS WTR IN
HPWS WTR OUT
HP
LOC
RVS
FPI
FP2
CO
P1
P2
P3
24V DC
EHI
EH2
AL1
AL2
TRANSFORMER PRIMARY VOLTAGE LEAD COLORS
PRIMARY VOLTAGE
PRIMARY LEAD COLOR
380V
460V
575V
BLK/RED
GRY
POWER SUPPLY REFER TO DATA PLATE FOR CONNECTION DIAGRAM ONLY. SEE NOTE 2.
CB*
TRANS
SEE NOTE 3
GROUND
INDUSTRIAL
PUMP* OPTIONAL INTERNAL
COMPR
CC
T1
T2
T3
L1
L2
L3
PUMP
ALT MTR BOX FOR 380V, 460V & 575V
YEL OR WHT
BMC
BM
BLU
BRN
BLK
RED
YEL
GRY
ORG
PUR
VIO
GRY/YEL

Typical Wiring Diagram – Three Phase 460/575V TR Units with DXM & LON Controller


TITLE: H/V 024-070 460/60/3, 575/60/3, 380-420/50/3 DXM w/LON
PDN: 10-0290
DATE: 7/6/10
DRAWING NO: 96B0008N04
REV: N
LEGEND
Factory Line Voltage Wiring
Factory Low Voltage Wiring
Field Line Voltage Wiring
Field Low Voltage Wiring
Printed Circuit Trace
Optional Wiring
Relay / Contactor Coil
Thermistor
Condensate Pan
Ground
Wire Nut
Splice Cap
Solenoid Coil
Relay contacts - N.O.
Switch Temperature
Switch High Pressure
Switch Low Pressure
Circuit Breaker
Relay contacts - N.C.
AL Alarm Relay Contacts
BR Blower Relay
BM Blower Motor
BMC Blower Motor Capacitor
CAP Compressor Capacitor
CB Circuit Breaker
CC Compressor Contactor
CO Sensor, Condensate Overflow
FPI Sensor, Freeze Protection, Water Coil
FP2 Sensor, Low Temp Protection, Air Coil
CCH Crankcase Heater
HP High Pressure Switch
HPWS Clippard Field Selection Jumper
JWI Loss of Charge Pressure Switch
LOC Motorized Valve
MV
MVES Motorized Valve End Switch
PI Field Wiring Terminal Block
RVS Reversing Valve Solenoid
T-Trans Transformer
* Optional Wiring
NOTES:
1. COMPRESSOR & BLOWER MOTOR THERMALLY PROTECTED INTERNALLY.
2. ALL WIRING TO THE UNIT MUST COMPLY WITH NEC AND LOCAL CODES.
3. TRANSFORMER IS WIRED 460V (BLK/RED) LEAD FOR 460/60/3 UNITS. 575V (GRY/RED) LEAD FOR 575/60/3 UNITS. FOR 380/50/3 UNITS CONNECT VIO & BRN LEADS AT 415V TAP. TRANSFORMER IS ENERGY LIMITING OR MAY HAVE CIRCUIT BREAKER.
4. FPI THERMISTER PROVIDES LOW TEMPERATURE PROTECTION FOR WATER. WHEN USING ANTI-FREEZE SOLUTIONS, CUT JW3 JUMPER.
5. REFER TO HFC-410A TST INSTALLATION, APPLICATION, AND OPERATION MANUAL FOR CONTROL WIRING TO THE UNIT. THERMOSTAT MUST HAVE OWB TERMINAL FOR HEAT PUMP WITH AUXILIARY HEAT. LOW VOLTAGE WIRING MUST BE "CLASS 1" AND VOLTAGE RATED EQUAL OR GREATER THAN UNIT SUPPLY VOLTAGE.
6. FACTORY CUT JW4 JUMPER. DRY CONTACT WILL BE AVAILABLE BETWEEN AL1 AND AL2.
7. TRANSFORMER SECONDARY GROUND VIA GREEN WIRE WITH YELLOW STRIPE FROM "C" TERMINAL TO CONTROL BOX.
8. BLOWER MOTOR IS FACTORY WIRED FOR MEDIUM AND HIGH SPEEDS. FOR ANY OTHER COMBINATION OF SPEEDS, AT THE MOTOR ATTACH BLACK WIRE TO THE HIGHER OF THE TWO DESIRED SPEED TAPS, AND THE BLUE WIRE TO THE LOWER OF THE TWO DESIRED SPEED TAPS.
9. BLOWER MOTOR IS FACTORY WIRED FOR HIGH & LOW SPEED. NO OTHER COMBINATION AVAILABLE. OTHER COMBINATION AVAILABLE.
10. OPTIONAL LON WIRES. ONLY CONNECT IF LON CONNECTION IS DESIRED AT THE WALL SENSOR.
DXM CONTROLLER FAULT CODES
OPERATION | STATUS LED (GREEN) | TEST LED (YELLOW) | FAULT LED (RED) | ALARM RELAY
Normal Mode | ON | OFF | Note 2 | Open
DXM is Non-Functional | OFF | OFF | OFF | Open
Night Setback | ON | ON | OFF | Close
Night Setback | Flashing Code 2 | - | Note 2 | Cycle (Note 3)
Emergency Shut Down | Flashing Code 3 | - | Note 2 | -
Invalid T-Stat Inputs | Flashing Code 4 | - | Note 2 | -
No Fault in Memory | On | - | OFF | Open
LP Fault / (Lockout) Note 1 | Slow Flash (Fast Flash) | OFF | Flashing Code 1 | Open / (Closed)
FP1 Fault / (Lockout) Note 1 | Slow Flash (Fast Flash) | OFF | Flashing Code 3 | Open / (Closed)
FP2 Fault / (Lockout) Note 1 | Slow Flash (Fast Flash) | OFF | Flashing Code 4 | Open / (Closed)
CO Fault / (Lockout) Note 1 | Slow Flash (Fast Flash) | OFF | Flashing Code 5 | Open / (Closed)
Over/Under Voltage | Slow Flash | OFF | Flashing Code 6 | Open / (Closed)
Swapped P1/FP2 Lockout | Fast Flash | OFF | Flashing Code 8 | Close (Note 5)
Swapped P1/FP2 Lockout | Fast Flash | OFF | Flashing Code 8 | Closed
1. Status LED (Green) "Slow Flash" Controller in Fault Retry Mode. Fast Flash = Controller in Lockout Mode Slow Flash = 1 flash per every 2 seconds. Fast Flash = 2 flashes per every 1 second.
2. Fault LED (Red) flashes a code representing last fault in memory. If no fault in memory, code is off.
3. Cycles appropriate code, by cycling alarm relay in the same sequence as Fault LED.
4. Alarm relay closes after 15 minutes.
5. Alarm Relay cycles - closed for 5 seconds and open for 25 seconds.
TABLE 1
BLOWER SPEEDS | WIRE NUMBER: 1 | 2 | 4 | 5
FACTORY HI + MED | BM(H) TO BR2(6) | BM(R) TO BR2(3) | BM(M) TO BR2(7) | NOT USED | BR2(6) TO BR2(4)
HI + LOW | BM(H) TO BR2(6) | BM(R) TO BR2(3) | NOT USED | BM(L) TO BR2(7) | BR2(6) TO BR2(4)
MED + LOW | BM(H) TO BR2(5) | BM(R) TO BR2(3) | BM(M) TO BR2(6) | BM(L) TO BR2(7) | BR2(7) TO BR2(4)
TRANSFORMER PRIMARY LEAD COLORS
PRIMARY VOLTAGE | PRIMARY LEAD COLOR
208V | BRN
240V | ORG
480V | GRY
575V | RED
Power Supply Refer to Data Plate Use Copper Conductors Only.
See Note 3
CB TRANS
24V
BRN (420V)
BLK
GROUND
L1 L2 L3
T3 T2 T1
CC
COMPR
See Note 8
See Alt Mtr Box for 380V, 460V & 575V
Alt Mtr Box for 575V
See Note 9
BM
BMC
BR1
BR2
Component Location
Digital Wall Sensor See Note 5
ASW03
Sensor Supply Air Temp
Sensor-Leaving Water Temp
LON Controller
LON
Protocol
LONWORKS
See Note 9
DXM Microprocessor Control Logic
See Note 6
JW4
AL2 DRY
See Note 7
See Note 5
MVES
See Note 4
FAN ENABLE RELAY
FAN SPEED RELAY
ALARM RELAY
ACC1 RELAY
ACC2 RELAY
COMPR RELAY
24V DC
EH1
EH2
P6
CAP TUBE
TXV UNIT
HPWS
HP
LOC
FPI
FP2
RV
CO
STATUS
TEST
FAULT
RV RELAY
TEST PINS
JW3 FPI Low
JW2 FP2 Low
JW1 LP N.O.
S1 DIP SWITCH PACKAGE
UPS, Disable/Enable
Stage 2 / Y2
T'Stat: RV on O Cool/Heat Pump
T'Stat: RV on B/RV on O
Dehum Mode: Dehum/Normal
Boc Output: Open/Normal
Alarm Relay: Energized/Disable
Boilerless Temp: 40°F/50°F
S2 DIP SWITCH PACKAGE
ACC1 Functions
ACC2 Functions
H: Hi Fan/Dehumid
Not Used

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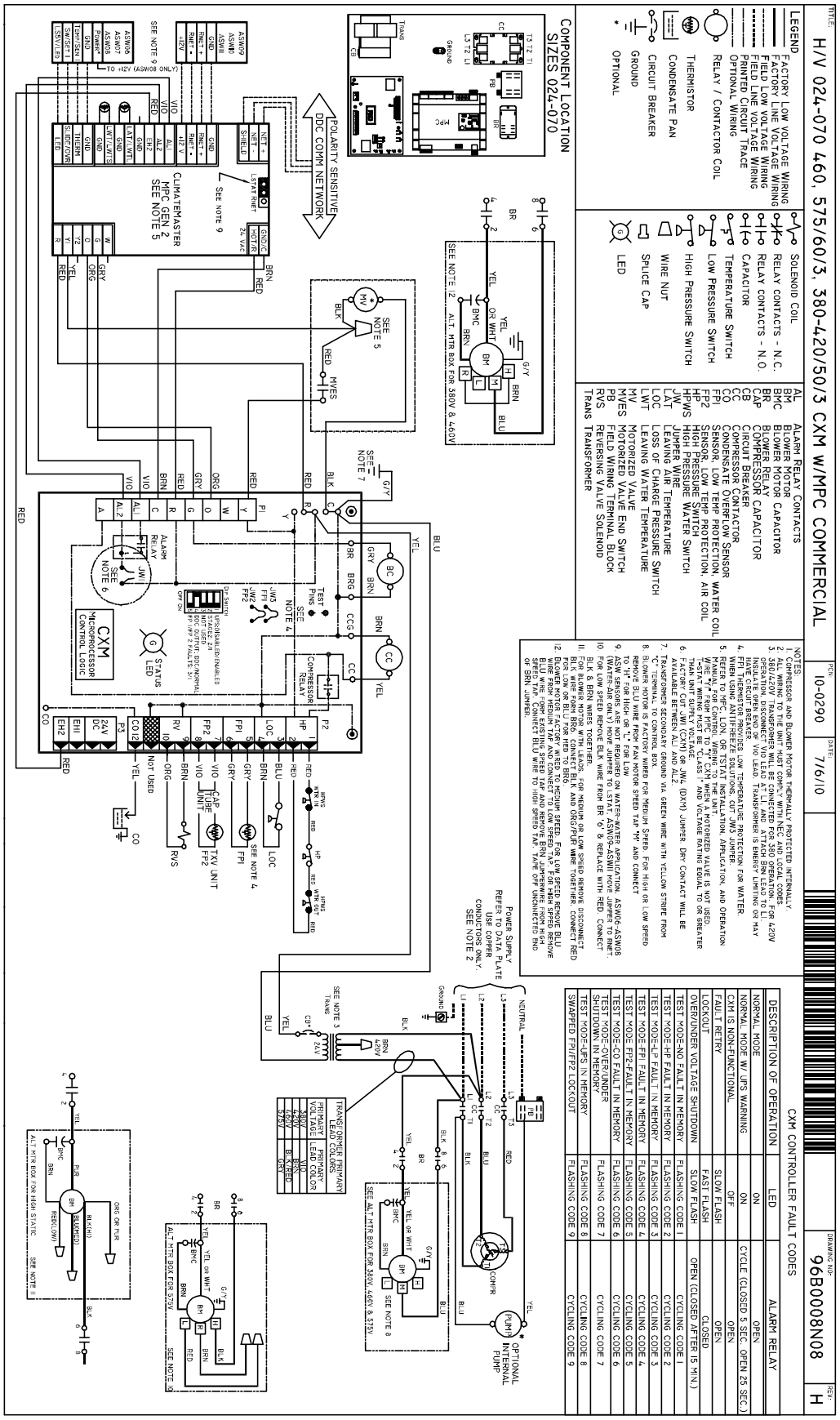
Typical Wiring Diagram – Three Phase 460/575V TR Units with CXM & MPC Controller


TITLE: H/V 024-070 460, 575/60/3, 380-420/50/3 CXM w/MPC COMMERCIAL
PCN: 10-0290
DATE: 7/16/10
DRAWING NO: 96B0008N08
REV: H
LEGEND
FACTORY LOW VOLTAGE WIRING
FACTORY LINE VOLTAGE WIRING
FIELD LOW VOLTAGE WIRING
FIELD LINE VOLTAGE WIRING
PRINTED CIRCUIT TRACE
OPTIONAL WIRING
RELAY / CONTACTOR COIL
THERMISTOR
CONDENSATE PAN
CIRCUIT BREAKER
GROUND
OPTIONAL
SOLENOID COIL
RELAY CONTACTS - N.C.
RELAY CONTACTS - N.O.
CAPACITOR
TEMPERATURE SWITCH
LOW PRESSURE SWITCH
HIGH PRESSURE SWITCH
WIRE NUT
SPLICE CAP
LED
AL ALARM RELAY CONTACTS
BM BLOWER MOTOR
BMC BLOWER MOTOR CAPACITOR
BR BLOWER RELAY
CAP COMPRESSOR CAPACITOR
CB CIRCUIT BREAKER
CC COMPRESSOR CONTACTOR
COMPONENT LOCATION SIZES 024-070
POLARITY SENSITIVE DDC COMM NETWORK
CLIMATEMASTER TCI GEN 2 SEE NOTE 5
CXM MICROPROCESSOR CONTROL LOGIC
POWER SUPPLY REFER TO DATA PLATE USE COPPER CONDUCTORS ONLY. SEE NOTE 2
OPTIONAL INTERNAL PUMP
CXM CONTROLLER FAULT CODES
DESCRIPTION OF OPERATION | LED | ALARM RELAY
NORMAL MODE | ON | OPEN
NORMAL MODE W/ UPS WARNING | ON | CYCLE (CLOSED 5 SEC. OPEN 25 SEC.)
CXM IS NON-FUNCTIONAL | OFF | OPEN
FAULT RETRY | SLOW FLASH | FAST FLASH | CLOSED
LOCKOUT | FAST FLASH | SLOW FLASH | OPEN (CLOSED AFTER 15 MIN.)
OVER/UNDER VOLTAGE SHUTDOWN | FLASHING CODE 1
TEST MODE-NO FAULT IN MEMORY | FLASHING CODE 1
TEST MODE-HP FAULT IN MEMORY | FLASHING CODE 2
TEST MODE-LP FAULT IN MEMORY | FLASHING CODE 3
TEST MODE-FP1 FAULT IN MEMORY | FLASHING CODE 4
TEST MODE FP2-FAULT IN MEMORY | FLASHING CODE 5
TEST MODE-CO FAULT IN MEMORY | FLASHING CODE 6
TEST MODE-OVER/UNDER SHUTDOWN IN MEMORY | FLASHING CODE 7
TEST MODE-UPS IN MEMORY | FLASHING CODE 8
SWAPPED FP1/FP2 LOCKOUT | FLASHING CODE 9
CYCLING CODE 1
CYCLING CODE 2
CYCLING CODE 3
CYCLING CODE 4
CYCLING CODE 5
CYCLING CODE 6
CYCLING CODE 7
CYCLING CODE 8
CYCLING CODE 9
NOTES:
1. COMPRESSOR AND BLOWER MOTOR THERMALLY PROTECTED INTERNALLY
2. ALL WIRING TO THE UNIT MUST COMPLY WITH NEC AND LOCAL CODES
3. FOR 420V OPERATION, DISCONNECT YEL LEAD AT CB AND ATTACH BRN LEAD TO LI
4. FP1 THERMISTOR PROVIDES LOW TEMPERATURE PROTECTION FOR WATER
5. REFER TO MPC, LON OR TSTAT INSTALLATION, APPLICATION, AND OPERATION
6. FACTORY CUT JW1 (CXM) OR JW4 (DXM) JUMPER. DRY CONTACT WILL BE
7. TRANSFORMER SECONDARY GROUND VIA GREEN WIRE WITH YELLOW STRIPE FROM
8. REMOVE BLU WIRE FROM MOTOR SPEED TAP "M" AND CONNECT
9. ASW SENSORS ARE NOT REQUIRED ON WATER-WATER APPLICATION. ASW06-ASW08
10. FOR BLOWER MOTOR WITH LEADS, FOR MEDIUM OR LOW SPEED REMOVE DISCONNECT
11. FOR BLOWER MOTOR WITH LEADS, FOR MEDIUM SPEED REMOVE BLU AND CONNECT
12. BLOWER MOTOR FACTORY WIRED TO MEDIUM SPEED. FOR LOW SPEED REMOVE BLU
TRANSFORMER PRIMARY LEAD COLORS
PRIMARY VOLTAGE | PRIMARY LEAD COLOR
208V | BRN
240V | BRN
460V | BLK/RED
575V | GRY

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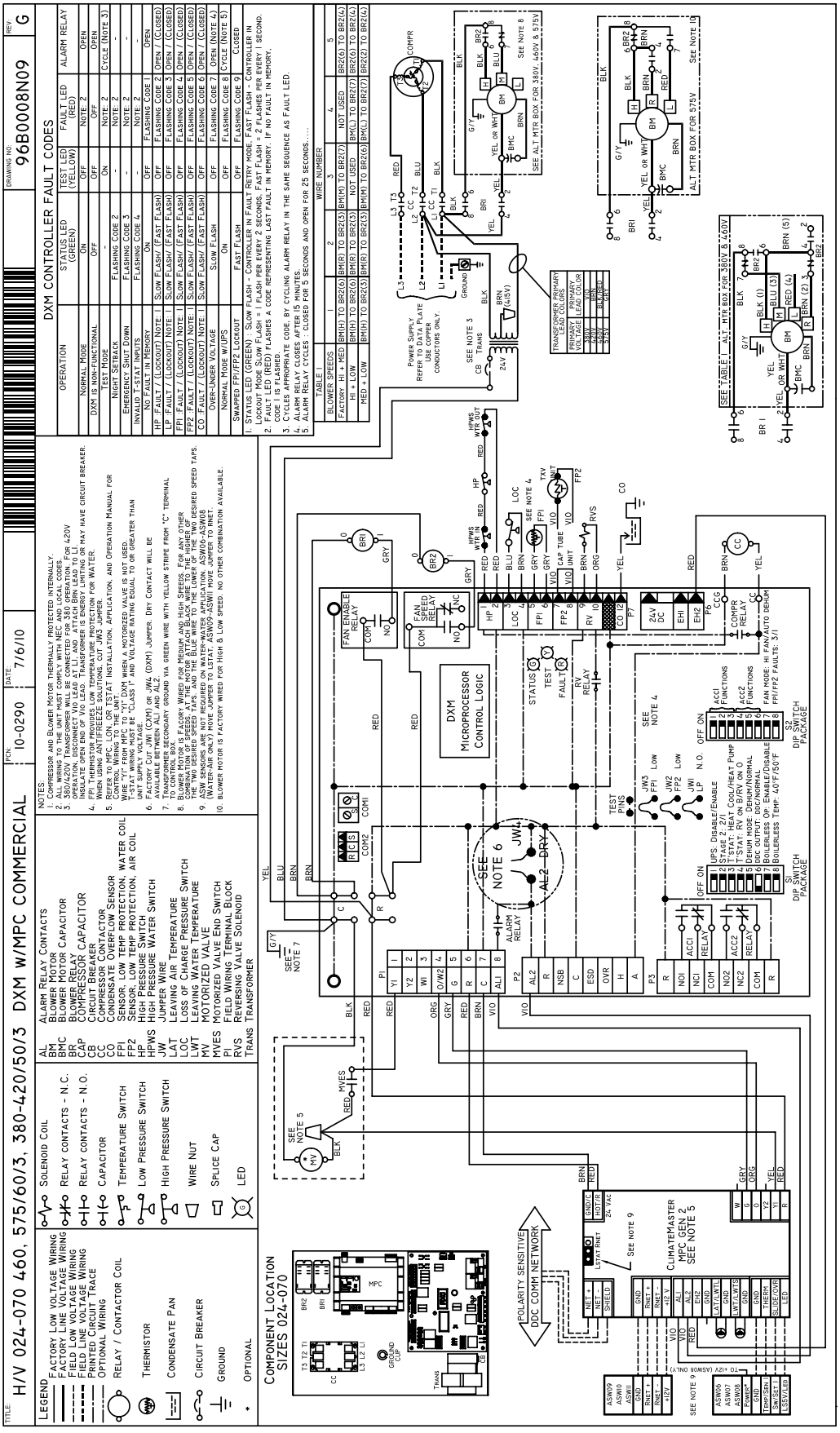
Typical Wiring Diagram – Three Phase 460/575V TR Units with DXM & MPC Controller


TITLE: H/V 024-070 460, 575/60/3, 380-420/50/3 DXM w/MPC COMMERCIAL
PO#: 10-0290
DATE: 7/6/10
DRAWING NO: 96B0008N09
REV: G
LEGEND
Factory Low Voltage Wiring
Factory Line Voltage Wiring
Field Low Voltage Wiring
Field Line Voltage Wiring
Printed Circuit Trace
Optional Wiring
Relay / Contactor Coil
Thermistor
Condensate Pan
Circuit Breaker
Ground
Optional
Solenoid Coil
Relay Contacts - N.C.
Relay Contacts - N.O.
Capacitor
Compressor Contactor
Condensate Overflow Sensor
Sensor, Low Temp Protection, Water Coil
Sensor, Low Temp Protection, Air Coil
High Pressure Switch
High Pressure Water Switch
Jumper Wire
Leaving Air Temperature
Loss Of Charge Pressure Switch
Leaving Water Temperature
Motorized Valve
Motorized Valve End Switch
Field Wiring Terminal Block
Reversing Valve Solenoid
Trans Transformer
Alarm Relay Contacts
Blower Motor
Blower Motor Capacitor
Blower Relay
Compressor Capacitor
Circuit Breaker
Compressor Contactor
Condensate Overflow Sensor
Sensor, Low Temp Protection, Water Coil
Sensor, Low Temp Protection, Air Coil
High Pressure Switch
High Pressure Water Switch
Jumper Wire
Leaving Air Temperature
Loss Of Charge Pressure Switch
Leaving Water Temperature
Motorized Valve
Motorized Valve End Switch
Field Wiring Terminal Block
Reversing Valve Solenoid
NOTES:
1. COMPRESSOR AND BLOWER MOTOR THERMALLY PROTECTED INTERNALLY.
2. ALL WIRING MUST CONFORM TO NEC AND LOCAL CODES.
3. 380/420V TRANSFORMER WILL BE CONNECTED FOR 380 OPERATION. FOR 420V OPERATION, DISCONNECT YIO LEAD AT L1 AND ATTACH BRN LEAD TO L1 TERMINAL. TRANSFORMER IS FACTORY WIRED FOR 380V AND MAY HAVE CIRCUIT BREAKER.
4. FP1 THERMISTOR PROVIDES LOW TEMPERATURE PROTECTION FOR WATER. WHEN USING ANTIFREEZE SOLUTIONS, CUT JW3 JUMPER.
5. REFER TO MPC, LON, OR TSTAT INSTALLATION, APPLICATION, AND OPERATION MANUAL FOR CONTROLLER WIRING INFORMATION.
6. FACTORY CUT JW1 (CXM) OR JW4 (DXM) JUMPER. DRY CONTACT WILL BE AVAILABLE BETWEEN AL1 AND AL2.
7. TRANSFORMER SECONDARY GROUND VIA GREEN WIRE WITH YELLOW STRIPE FROM "C" TERMINAL TO CONTROL BOX.
8. BLOWER MOTOR IS FACORY WIRED FOR MEDIUM AND HIGH SPEEDS. FOR ANY OTHER COMBINATION OF SPEEDS, CAP THE MOTOR LEAD WIRE ONE THE HIGHER OF DESIRED SPEED TAPS. TO CONNECT MOTOR LEAD WIRE TO DESIRED SPEED TAP, REMOVE CAP AND ATTACH BLACK WIRE ONTO DESIRED SPEED TAPS.
9. ASW SENSORS ARE NOT REQUIRED ON WATER-WATER APPLICATION. ASW06-ASW08 (WATER-AIR ONLY) MOVE JUMPER TO RNET.
10. BLOWER MOTOR IS FACTORY WIRED FOR HIGH & LOW SPEED. NO OTHER COMBINATION AVAILABLE.
DXM CONTROLLER FAULT CODES
OPERATION | STATUS LED (GREEN) | TEST LED (YELLOW) | FAULT LED (RED) | ALARM RELAY
Normal Mode | ON | OFF | NOTE 2 | OPEN
DXM is Normal/Optional T-Stat Mode | OFF | OFF | NOTE 2 | OPEN
Test Mode | ON | ON | NOTE 2 | CYCLE (NOTE 3)
Night Setback | Flashing Code 2 | - | NOTE 2 | -
Emergency Shut Down | Flashing Code 3 | - | NOTE 2 | -
Invalid T-Stat Inputs | Flashing Code 4 | - | NOTE 2 | -
No Fault in Memory | ON | OFF | Flashing Code 1 | OPEN
HP Fault / (Lockout) Note: 1 | Slow Flash* (Fast Flash) | OFF | Flashing Code 2 | Open / (Closed)
LP Fault / (Lockout) Note: 1 | Slow Flash* (Fast Flash) | OFF | Flashing Code 3 | Open / (Closed)
FP1 Fault / (Lockout) Note: 1 | Slow Flash* (Fast Flash) | OFF | Flashing Code 4 | Open / (Closed)
FP2 Fault / (Lockout) Note: 1 | Slow Flash* (Fast Flash) | OFF | Flashing Code 5 | Open / (Closed)
CO Fault / (Lockout) Note: 1 | Slow Flash* (Fast Flash) | OFF | Flashing Code 6 | Open / (Closed)
Over-Under Voltage | Slow Flash | OFF | Flashing Code 7 | Open (Note 4)
Normal Mode w/UPS | On | OFF | Flashing Code 8 | Cycle (Note 5)
Swapped FP1/FP2 Lockout | Fast Flash | OFF | Flashing Code 9 | Closed
1. Status LED (Green) : Slow Flash - Controller in Fault Retry Mode. Fast Flash - Controller in Lockout Mode Slow Flash = 1 Flash per every 2 seconds. Fast Flash = 2 Flashes per every 1 second.
2. Fault LED (Red) flashes a code representing last fault in memory. If no fault in memory.
3. Cycle 15 seconds.
4. Alarm relay closes after 15 minutes.
5. Alarm relay cycles : closed for 5 seconds and open for 25 seconds.....
TABLE 1
Blower Speeds | Wire Number: 1 | 2 | 3 | 4 | 5
Factory Hi + Med | BM(H) to BR2(6) | BM(R) to BR2(3) | BM(M) to BR2(7) | Not Used | BR2(6) to BR2(4)
Hi + Low | BM(H) to BR2(6) | BM(R) to BR2(3) | Not Used | BM(L) to BR2(7) | BR2(6) to BR2(4)
Med + Low | BM(H) to BR2(3) | BM(R) to BR2(3) | BM(M) to BR2(6) | BM(L) to BR2(7) | BR2(2) to BR2(4)
Component Location Sizes 024-070
MPC
T3 T2 T1
L3 L2 L1
Ground Clip
Trans
CB
BR2
BRI
Polarity Sensitive DDC Comm Network
See Note 9
ClimaTeMaster MPC Gen 2 See Note 5
Net +
Net -
Shield
LSTAT RNet
24 VAC
GND/C
Hot/R
W
G
Y2
Y1
R
GND
RNet +
RNet -
+12 V
AL1
AL2
GND
LAT/LWTI
GND
LWT/LWTS
GND
THERM
SLIDE/OVR
LED
ASW09 ASW05 ASW01 GND RNet + RNet - +12V
ASW06 ASW07 ASW08 Power* Temp/Sen Sw/Set Lssv/Led
* +12V (ASW08 ONLY)
See Note 9
See Note 10
See Table 1
Alt Mtr Box for 380V & 460V
Alt Mtr Box for 575V
See Alt Mtr Box for 380V, 460V & 575V
Compr
Power Supply Refer to Data Plate Use Copper Conductors Only!
See Note 3
Transformer Primary Connections
Primary Voltage
Lead Color
380V
420V
460V
575V
Ground
Trans
24V
Fan Enable Relay
Fan Speed Relay
Dxm Microprocessor Control Logic
See Note 6
See Note 7
See Note 4
Status
Test
Fault
Alarm Relay
AL2 Dry
Jw1
Jw2
Jw3
Jw4
Test Pins
Low
Fp1
Fp2
Lp
N.O.
Off On
Dip Switch Package
S1
S2
Ups, Disable/Enable
Stage 2 Y2
T'stat: Heat, Cool/Heat Pump
T'stat: Rv on B/Rv on O
Dehum Mode: Dehum/Normal
Doc Output: Doc/Normal
Blower: Cfm/Disable
Boilerless Temp: 40°F/50°F
Acc1 Functions
Acc2 Functions
Fan Mode: Hi Fan/Auto Dehum
Fp1/Fp2 Faults: 3/1
Compr Relay
Ccg
Ehi
Eh2
2Lv Dc
Rvs
Cap Tube
Txv
Loc
Hp
Lp
Fp1
Fp2
Co
Hpws Wtr In
Hpws Wtr Out
Yel
Blu
Brn
Red
Org
Gry
Vio
Blk
Bri
Bm
Bmc
Yel or Wht
G/Y
Brn (2)
Blk (1)
Blu (3)
Red (4)
Brn (5)
Br1
Br2
Cc
Ccg
Rv Relay
Myes
See Note 5
Mv
Green Wire with Yellow Stripe
Ground
Trans
Transformer
Alarm Relay Contacts
Blower Motor
Blower Motor Capacitor
Blower Relay
Compressor Capacitor
Circuit Breaker
Compressor Contactor
Condensate Overflow Sensor
Sensor, Low Temp Protection, Water Coil
Sensor, Low Temp Protection, Air Coil
High Pressure Switch
High Pressure Water Switch
Jumper Wire
Leaving Air Temperature
Loss Of Charge Pressure Switch
Leaving Water Temperature
Motorized Valve
Motorized Valve End Switch
Field Wiring Terminal Block
Reversing Valve Solenoid
Trans Transformer

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Tranquility® (TR) Series 60Hz
Engineering Specifications – Page 1

General:
Furnish and install ClimateMaster Tranquility® "TR" Water-Source Heat Pumps, as indicated on the plans. Equipment shall be completely assembled, piped and internally wired. Capacities and characteristics as listed in the schedule and the specifications that follow.

Units shall be supplied completely factory built capable of operating over an entering water temperature range from 20° to 120°F (-6.7° to 43.3°C) as standard. Equivalent units from other manufacturers may be proposed provided approval to bid is given 10 days prior to bid closing. All equipment listed in this section must be rated and certified in accordance with Air-Conditioning, Heating and Refrigeration Institute / International Standards Organization (AHRI / ISO 13256-1). All equipment must be tested, investigated, and determined to comply with the requirements of the standards for Heating and Cooling Equipment UL-1995 for the United States and CAN/CSA-C22.2 NO.236 for Canada, by Intertek Testing Laboratories (ETL). The units shall have AHRI / ISO and ETL-US-C labels.

All units shall be fully quality tested by factory run testing under normal operating conditions as described herein. Quality control system shall automatically perform via computer: triple leak check, pressure tests, evacuation and accurately charge system, perform detailed heating and cooling mode tests, and quality cross check all operational and test conditions to pass/fail criteria. Detailed report card will ship with each unit displaying status for critical tests and components. **Note: If unit fails on any cross check, it shall not be allowed to ship. Serial numbers will be recorded by factory and furnished to contractor on report card for ease of unit warranty status. Units tested without water flow are not acceptable**

Basic Construction:
Horizontal units shall have one of the following air flow arrangements: Left Inlet/Straight (Right) Discharge; Right Inlet/Straight (Left) Discharge; Left Inlet/Back Discharge; or Right Inlet/Back Discharge as shown on the plans. Units must have the ability to be field convertible from straight to back or back to straight discharge with no additional parts or unit structure modification. Horizontal units will have factory installed hanger brackets with rubber isolation grommets packaged separately.

Vertical Units shall have one of the following air flow arrangements: Left Return/Top Discharge, Right Return/Top Discharge, as shown on the plans.

If units with these arrangements are not used, the contractor is responsible for any extra costs incurred by other trades. All units (horizontal and vertical) must have a minimum of three access panels for serviceability of compressor compartment. **Units having only one or two access panels to compressor/heat exchangers/expansion device/refrigerant piping shall not be acceptable.**

All interior surfaces shall be lined with 1/2 inch (12.7mm) thick, 1-1/2 lb/ft3 (24 kg/m3) acoustic type glass fiber insulation. Insulation placement shall be designed in a manner that will eliminate any exposed edges to prevent the introduction of glass fibers into the air stream.

The heat pumps shall be fabricated from heavy gauge galvanized steel with powder coat paint finish on the front access panels.

Standard cabinet panel insulation must meet NFPA 90A requirements, air erosion and mold growth limits of UL-181, stringent fungal resistance test per ASTM-C1071 and ASTM G21, and shall meet zero level bacteria growth per ASTM G22. **Unit insulation must meet these stringent requirements or unit(s) will not be accepted.**

All horizontal units to have factory installed 1" (25.4mm) discharge air duct collars, 1" (25.4mm) filter rails with 1" (25.4mm) filters factory installed, and factory installed unit-mounting brackets. Vertical units to have field installed discharge air duct collar, shipped loose and 1" (25.4mm) filter rails with 1" (25.4mm) filters factory installed. **If units with these factory-installed provisions are not used, the contractor is responsible for any extra costs to field install these provisions, and/or the extra costs for his sub-contractor to install these provisions.**

All units must have an insulated panel separating the fan compartment from the compressor compartment. Units with the compressor in the air stream are not acceptable. Units shall have factory installed 1 inch (25.4mm) wide filter rails for filter removal from either side. Units shall have a 1 inch (25.4mm) thick throwaway type glass fiber filter. The contractor shall purchase one spare set of filters and replace factory shipped filters on completion of start-up. Filters shall be standard sizes. If units utilize non-standard filter sizes then the contractor shall provide 12 spare filters for each unit.

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Tranquility® (TR) Series 60Hz
Engineering Specifications – Page 2

Cabinets shall have separate holes and knockouts for entrance of line voltage and low voltage control wiring. All factory-installed wiring passing through factory knockouts and openings shall be protected from sheet metal edges at openings by plastic ferrules. Supply and return water connections shall be copper FPT fittings. All water connections and electrical knockouts must be in the compressor compartment corner post as to not interfere with the serviceability of unit. **Contractor shall be responsible for any extra costs involved in the installation of units that do not have this feature.** Contractor must ensure that units can be easily removed for servicing and coordinate locations of electrical conduit and lights with the electrical contractor.

Option: Contractor shall install 2-inch (50.8mm) filter frame with removable access door and 2 inch (50.8mm) Glass Fiber throwaway filters on all units.

Option: UltraQuiet package shall consist of discharge muffler (size 015 - 060); and sound attenuating material applied to the fan housing. Compressor is mounted on specially engineered sound-tested spring isolators.

Option: The unit shall be supplied with extended range insulation option, which adds closed cell insulation to internal water lines, and provides insulation on suction side refrigeration tubing including refrigerant to water heat exchanger.

Fan and Motor Assembly:
Blower shall have inlet rings to allow removal of wheel and motor from one side without removing housing. Units shall have a direct-drive centrifugal fan. The fan motor shall be 3-speed (2-speed for 575V), permanently lubricated, PSC type, with internal thermal overload protection. Units supplied without permanently lubricated motors must provide external oilers for easy service. The fan motor on small and medium size units (006-042) shall be isolated from the fan housing by a torsionally flexible motor mounting system with rubber type grommets to inhibit vibration induced high noise levels associated with "hard wire belly band" motor mounting. The fan motor on larger units (048 & 060) shall be isolated with flexible rubber type isolation grommets only. The fan and motor assembly must be capable of overcoming the external static pressures as shown on the schedule. Airflow/Static pressure rating of the unit shall be based on a wet coil and a clean filter in place.

Option: High static motors (sizes 015 - 060)

Refrigerant Circuit:
All units shall contain an EarthPure® (HFC-410A) sealed refrigerant circuit including a high efficiency scroll or rotary compressor designed for heat pump operation, a thermostatic expansion valve for refrigerant metering, an enhanced corrugated aluminum lanced fin and rifled copper tube refrigerant to air heat exchanger, reversing valve, coaxial (tube in tube) refrigerant to water heat exchanger, and safety controls including a high pressure switch, low pressure (loss of charge) switch, water coil low temperature sensor, and air coil low temperature sensor. Access fittings shall be factory installed on high and low pressure refrigerant lines to facilitate field service. Activation of any safety device shall prevent compressor operation via a microprocessor lockout circuit. The lockout circuit shall be reset at the thermostat or at the contractor supplied disconnect switch. **Units that cannot be reset at the thermostat shall not be acceptable.**

Hermetic compressors shall be internally sprung. The compressor shall have a dual level vibration isolation system. The compressor will be mounted on specially engineered sound-tested EPDM vibration isolation grommets or springs to a heavy gauge compressor mounting plate, which is then isolated from the cabinet base with rubber grommets for maximized vibration attenuation. Compressor shall have thermal overload protection. Compressor shall be located in an insulated compartment away from air stream to minimize sound transmission.

Refrigerant to air heat exchangers shall utilize enhanced corrugated lanced aluminum fins and rifled copper tube construction rated to withstand 625 PSIG (4309 kPa) refrigerant working pressure. Refrigerant to water heat exchangers shall be of copper inner water tube and steel refrigerant outer tube design, rated to withstand 625 PSIG (4309 kPa) working refrigerant pressure and 500 PSIG (3445kPa) working water pressure. The refrigerant to water heat exchanger shall be "electro-coated" with a low cure cathodic epoxy material a minimum of 0.4 mils thick (0.4 – 1.5 mils range) on all surfaces. The black colored coating shall provide a minimum of 1000 hours salt spray protection per ASTM B117-97 on all external steel and copper tubing. The material shall be formulated without the inclusion of any heavy metals and shall exhibit a pencil hardness of 2H (ASTM D3363-92A), crosshatch adhesion of 4B-5B (ASTM D3359-95), and impact resistance of 160 in-lbs (184 kg-cm) direct (ASTM D2794-93).

Option: The unit will be supplied with internally factory mounted two-way water valve for variable speed pumping requirements. A factory-mounted or field-installed high pressure switch shall be installed in the water piping to disable compressor operation in the event water pressures build due to water freezing in the piping system.

Option: The unit will be supplied with internally factory mounted automatic water flow regulators.

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Tranquility® (TR) Series 60Hz
Engineering Specifications – Page 3

Option: The unit will be supplied with internally mounted secondary pump for primary/secondary applications, including one-pipe systems.

Option: The unit will be supplied with cupro-nickel coaxial water to refrigerant heat exchanger.

Option: The refrigerant to air heat exchanger shall be coated.

Option: Unit shall include ClimaDry® II reheat option. Only modulating reheat that will adjust capacity based upon supply air temperature to provide "neutral" (72°F, 22.2°C) constant air temperature will be accepted. "Neutral" supply air temperature shall be provided regardless of entering loop water temperature (above 55°F, 12.8°C) or refrigerant condensing pressures. Control of reheat must be accomplished via a humidistat or dehumidistat contact closure. Refrigerant circuit must be AHRI certified. Approved equal manufacturers may provide pre-engineered integrated modulating hot gas reheat within the unit cabinet, or the installing contractor in conjunction with the "approved equal" unit manufacturer can provide for approval (during the submittal phase) an engineered system consisting of: a duct mounted hot water coil, small circulating pump, modulating control valve, and associated piping using the discharge condensor water off of the unit as the heating medium. All design costs and costs of field installed items including additional power wiring to the pump, and control wiring to and from pump and control valve to unit shall be borne by mechanical contractor. ***Refrigerant circuits that are not AHRI certified when the reheat option is applied will not be accepted. (See ClimaDry® submittal for application details and unit availablity.***

Option: The unit shall be supplied with a hot water generator (desuperheater).

Refrigerant metering shall be accomplished by thermostatic expansion valve only. Expansion valves shall be dual port balanced type with external equalizer for optimum refrigerant metering. Units shall be designed and tested for operating ranges of entering water temperatures from 20° to 120°F (-6.7° to 48.9°C). Reversing valve shall be four-way solenoid activated refrigerant valve, which shall default to heating mode should the solenoid fail to function. If the reversing valve solenoid defaults to cooling mode, an additional low temperature thermostat must be provided to prevent over-cooling an already cold room.

Drain Pan:
The drain pan shall be constructed of galvanized steel and have a powder coat paint application to further inhibit corrosion. This corrosion protection system shall meet the stringent 1000 hour salt spray test per ASTM B117. If plastic type material is used, it must be HDPE (High Density Polyethylene) to avoid thermal cycling shock stress failure over the lifetime of the unit. Stainless Steel materials are also acceptable. Drain pan shall be fully insulated. Drain outlet shall be located at pan as to allow complete and unobstructed drainage of condensate. Drain outlet for horizontal units shall be connected from pan directly to FPT fitting. **No hidden internal tubing extensions from pan outlet extending to unit casing (that can create drainage problems) will be accepted.** The unit as standard will be supplied with solid-state electronic condensate overflow protection. **Mechanical float switches will NOT be accepted.**

Vertical units shall be furnished with a PVC FPT condensate drain connection and an internal factory installed condensate trap. **If units without an internal trap are used, the contractor is responsible for any extra costs to field install these provisions, and/or the extra costs for his sub-contractor to install these provisions.**

Electrical:
A control box shall be located within the unit compressor compartment and shall contain a 50VA transformer, 24 volt activated, 2 or 3 pole compressor contactor, terminal block for thermostat wiring and solid-state controller for complete unit operation. Reversing valve and fan motor wiring shall be routed through this electronic controller. Units shall be name-plated for use with time delay fuses or HACR circuit breakers. Unit controls shall be 24 Volt and provide heating or cooling as required by the remote thermostat or sensor.

Solid State Control System (CXM):
Units shall have a solid-state control system. **Units utilizing electro-mechanical control shall not be acceptable.** The control system microprocessor board shall be specifically designed to protect against building electrical system noise contamination, EMI, and RFI interference. The control system shall interface with a heat pump type thermostat. The control system shall have the following features:

a. Anti-short cycle time delay on compressor operation.
b. Random start on power up mode.
c. Low voltage protection.
d. High voltage protection.
e. Unit shutdown on high or low refrigerant pressures.
f. Unit shutdown on low water temperature.

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g. Condensate overflow electronic protection.
h. Option to reset unit at thermostat or disconnect.
i. Automatic intelligent reset. Unit shall automatically reset the unit 5 minutes after trip if the fault has cleared. If a fault occurs 3 times sequentially without thermostat meeting temperature, then lockout requiring manual reset will occur.
j. Ability to defeat time delays for servicing.
k. Light emitting diode (LED) on circuit board to indicate high pressure, low pressure, low voltage, high voltage, low water/air temperature cut-out, condensate overflow, and control voltage status.
l. The low-pressure switch shall not be monitored for the first 120 seconds after a compressor start command to prevent nuisance safety trips.
m. 24V output to cycle a motorized water valve or other device with compressor contactor.
n. Unit Performance Sentinel (UPS). The UPS warns when the heat pump is running inefficiently.
o. Water coil low temperature sensing (selectable for water or anti-freeze).
p. Air coil low temperature sensing.

NOTE: Units not providing the 8 safety protections of anti-short cycle, low voltage, high voltage, high refrigerant pressure, low pressure (loss of charge), air coil low temperature cut-out, water coil low temperature cut-out, and condensate overflow protections will not be accepted.

Option: Enhanced solid state control system (DXM)
This control system features two stage control of cooling and two stage control of heating modes for exacting temperature and dehumidification purposes.

This control system coupled with a multi-stage thermostat will better dehumidify room air by automatically running the heat pump's fan at lower speed on the first stage of cooling thereby implementing low sensible heat ratio cooling. On the need for higher cooling performance the system will activate the second stage of cooling and automatically switch the fan to the higher fan speed setting. This system may be further enhanced with a humidistat. **Units not having automatic low sensible heat ratio cooling will not be accepted; as an alternate a hot gas reheat coil may be provided with control system for automatic activation.**

Control shall have all of the above mentioned features of the CXM control system along with the following expanded features:

a. Removable thermostat connector.
b. Night setback control.
c. Random start on return from night setback.
d. Minimized reversing valve operation (Unit control logic shall only switch the reversing valve when cooling is demanded for the first time. The reversing valve shall be held in this position until the first call for heating, ensuring quiet operation and increased valve life.).
e. Override temperature control with 2-hour timer for room occupant to override setback temperature at the thermostat.
f. Dry contact night setback output for digital night setback thermostats.
g. Ability to work with heat pump or heat/cool (Y,W) type thermostats.
h. Ability to work with heat pump thermostats using O or B reversing valve control.
i. Emergency shutdown contacts.
j. Boilerless system heat control at low loop water temperature.
k. Ability to allow up to 3 units to be controlled by one thermostat.
l. Relay to operate an external damper.
m. Ability to automatically change fan speed from multistage thermostat.
n. Relay to start system pump.
o. 75 VA control transformer. Control transformer shall have load side short circuit and overload protection via a built in circuit breaker.

Digital Night Setback with Pump Restart (DXM w/ ATP32U03/04)
The unit will be provided with a Digital Night Setback feature using an accessory relay on the DXM controller with an ATP32U03/04 thermostat and an external, field-provided time clock. The external time clock will initiate and terminate the night setback period. The thermostat will have a night setback override feature with a programmable override time period.
An additional accessory relay on the unit DXM controller will energize the building loop pump control for the duration of the override period. **(Note: this feature requires additional low voltage wiring. Consult Application Drawings for details.)**

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Remote Service Sentinel (CXM/DXM):
Solid state control system shall communicate with thermostat to display (at the thermostat) the unit status, fault status, and specific fault condition, as well as retrieve previously stored fault that caused unit shutdown. The Remote Service Sentinel allows building maintenance personnel or service personnel to diagnose unit from the wall thermostat. The control board shall provide a signal to the thermostat fault light, indicating a lockout. Upon cycling the G (fan) input 3 times within a 60 second time period, the fault light shall display the specific code as indicated by a sequence of flashes. A detailed flashing code shall be provided at the thermostat LED to display unit status and specific fault status such as over/under voltage fault, high pressure fault, low pressure fault, low water temperature fault, condensate overflow fault, etc. **Units that do not provide this remote service sentinel shall not be acceptable.**

Option: Lonworks interface system
Units shall have all the features listed above (either CXM or DXM) and the control board will be supplied with a LONWORKS interface board, which is LONMark certified. This will permit all units to be daisy chained via a 2-wire twisted pair shielded cable. The following points must be available at a central or remote computer location:

a. Space temperature.
b. Leaving water temperature.
c. Discharge air temperature.
d. Command of space temperature setpoint.
e. Cooling status.
f. Heating status.
g. Low temperature sensor alarm.
h. Low pressure sensor alarm.
i. High pressure switch alarm.
j. Condensate sensor alarm.
k. Hi/low voltage alarm.
l. Fan "ON/AUTO" position of space thermostat as specified above.
m. Unoccupied/occupied command.
n. Cooling command.
o. Heating command.
p. Fan "ON/AUTO" command.
q. Fault reset command.
r. Itemized fault code revealing reason for specific shutdown fault (any one of 7).

This option also provides the upgraded 75VA control transformer with load side short circuit and overload protection via a built in circuit breaker.

Option: MPC (Multiple Protocol Control) interface system
Units shall have all the features listed above (either CXM or DXM) and the control board will be supplied with a Multiple Protocol interface board. Available protocols are BACnet MS/TP, Modbus, or Johnson Controls N2. The choice of protocol shall be field selectable/changeable via the use of a simple selector switch. Protocol selection shall not require any additional programming or special external hardware or software tools. This will permit all units to be daisy chain connected by a 2-wire twisted pair shielded cable. The following points must be available at a central or remote computer location:

a. Space temperature.
b. Leaving water temperature.
c. Discharge air temperature.
d. Command of space temperature setpoint.
e. Cooling status.
f. Heating status.
g. Low temperature sensor alarm.
h. Low pressure sensor alarm.
i. High pressure switch alarm.
j. Condensate overflow alarm.
k. Hi/low voltage alarm.
l. Fan "ON/AUTO" position of space thermostat as specified above.
m. Unoccupied / occupied command.
n. Cooling command.

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o. Heating command.
p. Fan "ON/AUTO" command.
q. Fault reset command.
r. Itemized fault code revealing reason for specific shutdown fault (any one of 7).

This option also provides the upgraded 75VA control transformer with load side short circuit and overload protection via a built in circuit breaker.

Warranty:
ClimateMaster shall warranty equipment for a period of 12 months from start up or 18 months from shipping (which ever occurs first).

Option: Extended 4-year compressor warranty covers compressor for a total of 5 years.

Option: Extended 4-year refrigeration circuit warranty covers coils, reversing valve, expansion valve and compressor for a total of 5 years.

Option: Extended 4-year control board warranty covers the CXM/DXM control board for a total of 5 years.

FIELD INSTALLED OPTIONS

Hose Kits:
All units shall be connected with hoses. The hoses shall be 2 feet (61cm) long, braided stainless steel; fire rated hoses complete with adapters. Only fire rated hoses will be accepted.

Valves:
The following valves are available and will be shipped loose:
a. Ball valve; bronze material, standard port full flow design, FPT connections.
b. Ball valve with memory stop and PT port.
c. "Y" strainer with blowdown valve; bronze material, FPT connections.
d. Motorized water valve; slow acting, 24v, FPT connections.

Hose Kit Assemblies:
The following assemblies ship with the valves already assembled to the hose described:
a. Supply and return hoses having ball valve with PT port.
b. Supply hose having ball valve with PT port; return hose having automatic flow regulator valve with PT ports, and ball valve.
c. Supply hose having "Y" strainer with blowdown valve, and ball valve with PT port; return hose having automatic flow regulator with PT ports, and ball valve.
d. Supply hose having "Y" strainer with blowdown valve, and ball valve with PT port; return hose having ball valve with PT port.

Thermostats:
The thermostat shall be a ClimateMaster mechanical or electronic type thermostat as selected below with the described features:
a. Single Stage Standard Manual Changeover (ATM11C11)
Thermostat shall be a single-stage, horizontal mount, manual changeover with HEAT-OFF-COOL system switch and fan ON-AUTO switch. Thermostat shall have a mechanical temperature setpoint indicator. Thermostat shall only require 4 wires for connection. Mercury bulb thermostats are not acceptable.

b. Single Stage Digital Auto or Manual Changeover (ATA11U01)
Thermostat shall be a single-stage, digital, auto or manual changeover with HEAT-OFF-COOL-AUTO system switch and fan ON-AUTO switch. Thermostat shall have an LCD display with temperature and setpoint(s) in °F or °C. The Thermostat shall provide permanent memory of setpoint(s) without batteries. A fault LED shall be provided to display specific fault condition. Thermostat shall provide temperature display offset for custom applications.

c. Single Stage Digital Automatic or Manual Changeover with Two-Speed Fan Control (ATA11C04) – DXM and PSC Fan required
Thermostat shall be a single-stage, digital, auto or manual changeover with HEAT-OFF-COOL-AUTO system switch, fan ON-AUTO switch, and fan LO-HI switch. Thermostat shall have an LCD display with temperature and setpoint(s) in °F or °C. A fault LED shall be provided to display specific fault condition. Thermostat shall allow use of an accessory remote temperature sensor (AST009), but may be operated with internal sensor via orientation of a jumper.

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d. Multistage Digital Automatic Changeover (ATA22U01)
Thermostat shall be multi-stage (2H/2C), manual or automatic changeover with HEAT-OFF-COOL-AUTO-EM HEAT system settings and fan ON-AUTO settings. Thermostat shall have an LCD display with temperature, setpoint(s), mode, and status indication. The temperature indication shall be selectable for °F or °C. The thermostat shall provide permanent memory of setpoint(s) without batteries. A fault LED shall be provided to indicate specific fault condition(s). Thermostat shall provide temperature display offset for custom applications. Thermostat shall allow unit to provide better dehumidification with optional DXM controller by automatically using lower fan speed on stage 1 cooling (higher latent cooling) as main cooling mode, and automatically shifting to high speed fan on stage 2 cooling.

e. Multistage Manual Changeover Programmable 5/2 Day (ATP21U01)
Thermostat shall be 5 day/2 day programmable (with up to 4 setpoints per day), multi-stage (2H/1C), manual changeover with HEAT-OFF-COOL-EM HEAT system settings and fan ON-AUTO settings. Thermostat shall have an LCD display with temperature, setpoint(s), mode, and status indication. The temperature indication shall be selectable for °F or °C. The thermostat shall provide permanent memory of setpoint(s) without batteries. Thermostat shall provide convenient override feature to temporarily change setpoint.

f. Multistage Automatic or Manual Changeover Programmable 7 Day (ATP32U03)
Thermostat shall be 7 day programmable (with up to 4 setpoints per day), multi-stage (3H/2C), automatic or manual changeover with HEAT-OFF-COOL-AUTO-EM HEAT system settings and fan ON-AUTO settings. Thermostat shall have a blue backlit dot matrix LCD display with temperature, setpoints, mode, and status indication. The temperature indication shall be selectable for °F or °C. Time display shall be selectable for 12 or 24 hour clock. Fault identification shall be provided (when used with ClimateMaster CXM or DXM controls) to simplify troubleshooting by providing specific unit fault at the thermostat with red backlit LCD during unit lockout. The thermostat shall provide permanent memory of setpoints without batteries. Thermostat shall provide heating setpoint range limit, cooling setpoint range limit, temperature display offset, keypad lockout, dead-band range setting, and inter-stage differential settings. Thermostat shall provide progressive recovery to anticipate time required to bring space temperature to the next programmed event. Thermostat shall provide an installer setup for configuring options and for setup of servicing contractor name and contact information. Thermostat shall allow the use of an accessory remote and/or outdoor temperature sensor (AST008). Thermostat navigation shall be accomplished via five buttons (up/down/right/left/select) with menu-driven selections for ease of use and programming.

g. Multistage Automatic or Manual Changeover Programmable 7 Day with Humidity Control (ATP32U04)
Thermostat shall be 7 day programmable (with up to 4 setpoints per day), multi-stage (3H/2C), automatic or manual changeover with HEAT-OFF-COOL-AUTO-EM HEAT system settings and fan ON-AUTO settings. Separate dehumidification and humidification setpoints shall be configurable for discreet outputs to a dehumidification option and/or an external humidifier. Installer configuration mode shall allow thermostat dehumidification mode to operate with ClimaDry® reheat or with ECM fan dehumidification mode via settings changes. Thermostat shall have a blue backlit dot matrix LCD display with temperature, relative humidity, setpoints, mode, and status indication. The temperature indication shall be selectable for °F or °C. Time display shall be selectable for 12 or 24 hour clock. Fault identification shall be provided (when used with ClimateMaster CXM or DXM controls) to simplify troubleshooting by providing specific unit fault at the thermostat with red backlit LCD during unit lockout. The thermostat shall provide permanent memory of setpoints without batteries. Thermostat shall provide heating setpoint range limit, cooling setpoint range limit, temperature display offset, keypad lockout, dead-band range setting, and inter-stage differential settings. Thermostat shall provide progressive recovery to anticipate time required to bring space temperature to the next programmed event. Thermostat shall provide an installer setup for configuring options and for setup of servicing contractor name and contact information. Thermostat shall allow the use of an accessory remote and/or outdoor temperature sensor (AST008). Thermostat navigation shall be accomplished via five buttons (up/down/right/left/select) with menu-driven selections for ease of use and programming.

DDC Sensors:
ClimateMaster wall mounted DDC sensor to monitor room temperature and interfaces with optional interface system described above. Several types as described below:
a. Sensor only with no display (LON and MPC).
b. Sensor with override (LON only).
c. Sensor with setpoint adjustment and override (MPC only).
d. Sensor with setpoint adjustment and override, LCD display, status/fault indication (LON and MPC).

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Revision History

Date:	Item:	Action:
07/18/13	EAT Minimum Limit ClimaDry®	Updated
02/05/13	Electrical Data Tables	Miscellaneous Edits
09/27/12	EAT Limits Recommended Minimum Installation Clearances for Vertical Units *	Updates to Text - ClimaDry® Option Added
08/23/12	Unit Hanger Detail	Updated
05/22/12	ClimaDry WPD Table Size 015, 018 w/ClimaDry	Updated, Removed
02/20/12	Engineering Specifications	Updated
02/02/12	ClimaDry® II Option Information	Merge Data From ClimaDry® II Submittal
09/19/11	Size 024	Added “H” and “F” Voltage
08/09/11	Unit Maximum Working Water Pressure	Updated to Reflect New Safeties
08/03/11	Engineering Specifications	Added Digital Night Setback with Pump Restart (DXM w/ ATP32U03/04)
06/17/11	Coated Air Coil Option	Added
04/07/11	Engineering Specification NOTICE	Updated
02/11/11	Performance Data Selection Notes	Updated
01/03/11	Format All Pages	Updated
10/27/10	Blower Performance Data	Updated
10/22/10	Engineering Specifications	Updated
10/22/10	ClimaDry® Data, Horizontal Unit Diagram	Added/Updated
10/05/10	Horizontal Dimensional Data	Updated
09/28/10	Engineering Specifications	Updated
09/28/10	Physical Data Table	Added Condensate Drain Connection Note
09/01/10	012 E Voltage Airflow Correction Table	Added/Corrected
07/26/10	Wiring Diagrams	Updated
07/26/10	Compressor Mounting Information and Graphics Engineering Specifications	Updated to Reflect Spring/Grommet Change
06/11/10	Format - All Pages	Updated
06/11/10	Engineering Specifiations	Updated
04/8/10	Less ClimaDry® Misc.	Updated
04/8/10	Engineering Specifications Misc.	Updated
03/29/10	Dimensions, electrical, text Misc.	Updated
02/12/10	Dimensions, electrical, text Misc.	Updated
09/01/09	First Published	

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